DRANETZ

User's Guide for Series 626 Universal Disturbance Analyzer

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USER'S GUIDE

for

SERIES 626

UNIVERSAL DISTURBANCE ANALYZER

PRICE: $2.50

Service (201) 755-7081

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WARNING

Because of shock or fire hazards, connection to this instrument should be performed in compliance with the National Electrical Code (ANSI CI) and/or any other requirements which may be applicable to the user. Installation, operation, and maintenance should be performed only by qualified personnel.

Note

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This guide is furnished as a quick reference aid for using the Series 626 Universal Disturbance Analyzer. The User's Guide should, by no means, be considered an effective substitute for carefully reading and understanding the 626 Mainframe Operator's Manual (TM-106650) and the Operator's Manuals for the various Plug-ins.

GENERAL

The 626 Universal Disturbance Analyzer consists of a mainframe with capacity for up to 5 plug-in monitoring modules. The mainframe provides all operating controls, power, and a common time base for the plug-ins. Any plug-in which detects a printable event is immediately serviced and its data is put into a buffer for printout. This buffer will store approximately 64 lines of data.

626 MAINFRAME

1.0 FRONT PANEL

Illustrated below is the 626 front panel. As previously mentioned, the front panel contains all the operating controls needed, regardless of the type or number of plug-ins.

1.1 OPERATING CONTROLS

ALARM Pushbutton

When depressed to "IN" position, an audible alarm will sound when certain disturbances or event changes occur. When this pushbutton is "OUT", no alarm will sound.

PRINT Pushbutton

This is a momentary pushbutton which will alternately turn on and ırn off the 626 printer. Note that the printer cannot be turned off unless connection to some external device is made via the RS-232C interface. Whenever the 626 is turned on the printer will start in the "ON" condition.

PRESET Pushbutton

With the 626 set in PROGRAM mode to program any plug-in, pushing RESET will program the plug-in with a predetermined set of values, re-ained in a PROM within the plug-in. Users may specify a custom PRESET or each module, at extra cost.

DATA Pushbutton

With the 626 in OPERATE mode, pushing this pushbutton will cause a DATA SUMMARY to be printed, as shown below. The DATA SUMMARY ncludes the day number, time, a summary of collected disturbance data, and resent values, separately for each plug-in, and for each phase or channel vithin a plug-in.

Read Up

```
PRESENT F 060.0 HZ
  C       121.0V
  B       121.8V
  A       121.8V
PRESENT V

0133 V       0140 US
IMPULSE       002 HT
SAG   000.0V  004 HT
        PH C
0107 V       0169 US
IMPULSE       001 HT
SAG   000 0V  004 HT
        PH B
0160 V      1671 US
IMPULSE       003 HT
SAG   000.0V  004 HT
        PH A
    626-PA-6003
        CH 3

TIME = 17:31:36.77
     DAY # 23
  DATA SUMMARY
```

Notes

1. "HT" means "Hits", or occurrences of a particular disturbance.
2. Worst case of each type of disturbance is shown.
3. For 626-PA-6003 and 626-PA-6009 Series and for Option 101 for 626-PA-6001, -6002, or -6006, duration in microseconds for largest magnitude impulse is shown.

PROG Pushbutton

With the 626 in OPERATE mode, pushing this pushbutton causes a listing of how each plug-in is programmed. An example is shown below.

```
IMPULSE SENS 01.0V
VOLTAGE SENS 00.1V
V LOW LIMIT  04.9V
V HIGH LIMIT 05.1V
RANGE F.S.   20.0V
   626-PA-6002A
       CH 2

TIME = 20:31:47.07
 PROGRAM SUMMARY
```

Read Up

FEED Pushbutton

When held in depressed position, causes paper to advance out of printer.

RANGE Pushbutton

Used when programming certain plug-ins to select 1 of several full-scale ranges.

INPUT Pushbutton

Used to select which of several channels in some multi-channel plug-ins is to be programmed.

ENTER Pushbutton

Used to program user-selected values into 626 time clock or plug-in program.

LO LIMIT, HI LIMIT, SENS, IMP SENS, F SENS, and FNC Pushbuttons

Used when programming to select which of several parameters is to be programmed.

NUMERIC KEYBOARD (0–9, •, AND CLEAR ENTRY)

Used to enter values when programming or setting time.

SET T Pushbutton

With 626 in PROGRAM mode, depressing SET T enables operator to set time. To set time, refer to Section 4.0.

1-5 Pushbuttons

With 626 in PROGRAM mode, depressing one of these selects the plug-in to be programmed.

FUNCTION Keyswitch

OFF:	Turns off 626.
OPERATE:	Normal operating position. Pushbuttons used for programming are disabled. Setting can be secured by removing key.
PROGRAM:	Position used to program plug-ins or set time.
CLEAR DATA:	Zeroes all data accumulators. Does not affect programs, time, or day count.
RESET:	Resets CPU. Zeroes all data accumulators. Does not affect programs, time, or day count.

LINE BATT 2 Color LED:

Green light indicates normal operation from AC power, red light indicates operation from internal UPS.

PRINTOUT MODE Keyswitch

CALIBRATE:	Activates SYSTEM CHECK for each plug-in. Either a known signal is generated at the input of each plug-in, or precision voltage references within the plug-in are checked. Results may be compared to norms listed in manual for each plug-in. Provides means of verifying proper operation of entire 626 analysis system.
MAXIMUM DETAIL NORMAL OUT-OF-LIMITS ONLY SUMMARY ONLY	Provide means of reducing detail of printout. MAXIMUM DETAIL provides a record of all disturbances or other events. NORMAL and OUT-OF-LIMITS ONLY reduce detail in two stages. SUMMARY ONLY inhibits printing other than day-end summaries.

2 PRINTOUT MODES – OPERATION

The voltage-monitoring plug-ins and some of the other plug-ins such as the Temperature and Humidity and the Universal Transducer Module, use an operating program which assigns all or some of the following:

RANGE:	A full-scale setting which must be selected, much like setting a range on a voltmeter.
HI LIMIT:	An upper limit on the monitored signal. Voltages above the HI LIMIT will be labeled OVERVOLTAGES if they stay high for 2.56 seconds or longer. Disturbances are labeled SURGES if the voltage falls below the HI LIMIT within 2.55 seconds.

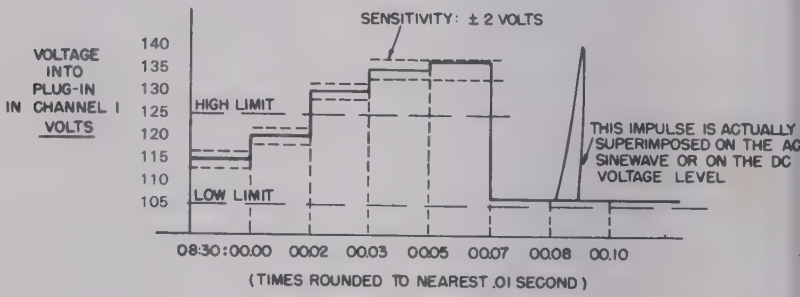
LO LIMIT: A lower limit on the monitored signal. Voltages below the LO LIMIT will be labeled UNDERVOLTAGES if they stay low for 2.56 seconds or longer. Disturbances are labeled SAGS if the voltage rises above the LO LIMIT within 2.55 seconds.

SENSITIVITY: The amount of change of voltage (or temperature, etc.) which will result in INCrease or DECrease printouts. By setting a small sensitivity, changes may be tracked very closely.

IMPULSE SENSITIVITY: A threshold which high-frequency impulses must exceed to be detected and recorded.

FREQUENCY SENSITIVITY: A tolerance to frequency changes above or below the norm.

1.2.1 Measurement Example



This example applies in principle to any of the voltage monitoring plug-ins. The heavy, solid, jagged line represents the measured incoming voltage level for consecutive measurement intervals. For 50 or 60 Hz AC, the measurement interval is 1 cycle (20 or 16.67 msec, respectively). For 400 Hz, the measurement interval is 4 cycles. The measurement interval for DC plug-ins is fixed at 20 msec.

The measurements made during these intervals are the bases for voltage INCREASES, DECREASES, SAGS, SURGES, UNDERVOLTAGES, and OVERVOLTAGES. Also, impulses are reported up to once per interval, while frequency measurements are the result of timing four intervals.

In our example, the starting point is 115 volts. The SENSITIVITY is set at 2 volts, so the 626 is looking for an interval measurement of 117 or higher, or 113 or lower. In fact, the next measurement is 120. This is recorded as a voltage INCREASE. The SENSITIVITY limits are re-established at 122 and 118.

The next measurement is 130 volts. This represents two separate nts: An INCREASE and a crossing of the HIGH LIMIT. Next is an CREASE to 135, followed by a small change to 136 volts. This latter nge is not enough to be classified as an INCREASE, since the SENSITI-TY limits are not crossed.

The next measurement is a DECREASE to 107 volts. Because this CREASE also represents a return to the area below the HIGH LIMIT, a arate NORMAL message is also printed, indicating the maximum voltage ched and the SURGE duration. Finally, an IMPULSE is detected.

.2. Printout Modes

The mainframe provides four levels of printout detail. The measure-nt example just illustrated provides a convenient means of explaining four levels. The exact printout format will vary somewhat for different es of plug-ins.

- MAXIMUM DETAIL: All disturbances are printed, including all INCREASES and DECREASES. Our example would produce this record:

Read Up

```
1  IMP   08:30:00.10
   +0033 V, 0017 US

1  DEC   08:30:00.08
   107.0 V

1  NORM  08:30:00.08
   136.0 V MAX
   SURGE 0.05 SEC

1  INC   08:30:00.05
   135.0 V

1  INC   08:30:00.03
   130.0 V

1  HIGH  08:30:00.03

1  INC   08:30:00.02
   120.0 V
```

NORMAL: Same as MAXIMUM DETAIL, except INCREASES and DECREASES to voltage levels within the LO and HI limits are not printed. Our example:

Read Up

```
1  IMP   08:30:00.10
   +0033 V,  0017 US

1  NORM  08:30:00.08
   136.0 V MAX
   SURGE 0.05 SEC

1  INC   08:30:00.05
   135.0 V

1  INC   08:30:00.03
   130.0 V

1  HIGH  08:30:00.03
```

OUT-OF-LIMITS ONLY: No DECREASES or INCREASES are printed. Other disturbances are printed as before. Our example:

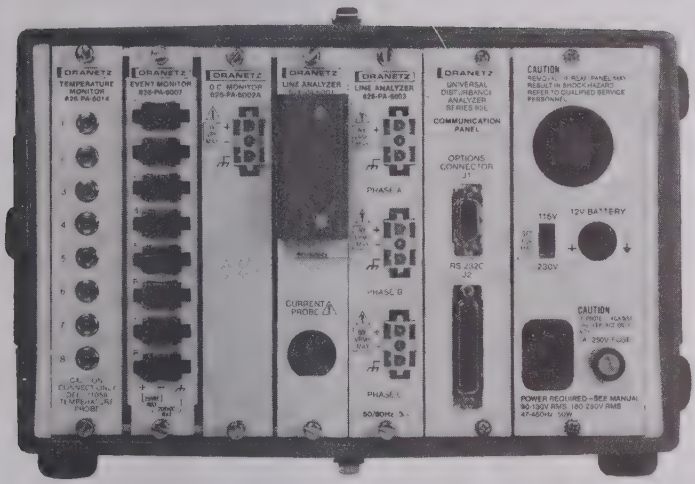
Read Up

```
1  IMP   08:30:00.10
   +0033 V,  0017 US

1  NORM  08:30:00.08
   136.0 V MAX
   SURGE 0.05 SEC

1  HIGH  08:30:00.03
```

SUMMARY ONLY: There are no printouts of individual events in this mode. Only daily summaries are printed automatically. Other printouts, such as DATA SUMMARY and PROGRAM SUMMARY, may be printed on command.

0 REAR PANEL;

Refer to the illustration below.



POWER SUPPLY MODULE

The power supply module provides all the operating power need by ne 626. A 3 AMP fuse and 115/230 VAC switch are accessible by the oper- tor. A 12 VDC connector is available to extend UPS operation with an xternal 12 volt DC source.

COMMUNICATIONS PANEL

Two connectors are provided on this panel.

.0.1. Options Connector J1

Here are provided pinouts for alarm contacts which close when certain listurbance events occur. The contacts are rated at 25 volts, 100 ma. max. A second set of normally open contacts is as yet undesignated.

Two other pinouts are provided for the standard time mark feature. A DC voltage of 5-12 volts with a minimum 100 μ sec duration causes a pecial time printout to be printed, preceeded by a "#" symbol.

Pins 4 and 9 are 626 mainframe Option 102, Field Contact Supply. This is a 5 VDC, 5 KΩ source impedance supply for using the 626-PA-6007 or 626-PA-6011 with dry contacts.

J1 PINOUTS

PIN NUMBER	FUNCTION
1	Alarm Contact
2	Relay Contact (Undesignated)
3	Time Mark (-)
4	Field Contact Supply (+) (Optional)
5	
6	Alarm Contact
7	Relay Contact (Undesignated)
8	Time Mark (+)
9	Field Contact Supply (-) (Optional)

2.0.2 RS-232C Connector J2

The RS-232C interface allows 626 data to be brought into another device for printout, storage, or processing. All output is a duplicate of what is printed on the 626's own printer, unless the internal printer is turned off.

2.0.2.1 RS-232 Remote Operation

626's delivered prior to November, 1982 will accept three remote commands, which may be entered from a terminal:

P will produce a PROGRAM SUMMARY

D will produce a DATA SUMMARY

C will produce a SYSTEM CHECK

The command character will be printed in column 1 on the 626 paper tape and/or any remote display device. Invalid characters are echoed with a "?".

626's delivered in November, 1982 or later can be *fully operated* in either LOCAL or REMOTE ONLY MODE.

LOCAL MODE

When the 626 is turned on, it will start in LOCAL MODE. In this mode, the 626 responds ONLY to commands entered from its front panel and ignores inputs received through its RS-232C port, with one exception: The tilde (~) character. Each time this character is received, the 626 will toggle between LOCAL and REMOTE ONLY MODE.

REMOTE ONLY MODE

When placed in REMOTE ONLY MODE, the 626 will respond only to commands received through its RS-232C interface. The only exceptions are the "OFF" and "RESET" positions of the FUNCTION switch. As shown in the table below, an ASCII character has been set equivalent to each front-panel pushbutton or switch position (except "OFF" and "RESET").

626 REMOTE COMMANDS

Valid ONLY in REMOTE ONLY Mode

FRONT PANEL CONTROL	EQUIVALENT ASCII COMMAND
FUNCTION SWITCH	
OFF	None – Local Only
OPERATE	O
PROGRAM	G
CLEAR DATA	K
RESET	None – Local Only
PRINTOUT MODE SWITCH	
SUMMARY ONLY	M
OUT-OF-LIMITS ONLY	U
NORMAL	N
MAXIMUM DETAIL	X
CALIBRATE (System Check)	C
UPPER PUSHBUTTONS	
ALARM	Q (To Turn OFF) or A (To Turn ON)
PRINTER	Z
PRESET	T
DATA	D
PROG	P
FEED	(Space)
PROGRAMMING PUSHBUTTONS	
RANGE	R
INPUT	J

(continued on next page)

FRONT PANEL CONTROL	EQUIVALENT ASCII COMMAND
ENTER	E
LO LIMIT	L
HI LIMIT	H
SENS	S
IMP SENS	I
F SENS	F
FNC (Function)	<
(Decimal Point)	.
(Colon)	:
CLEAR ENTRY	Delete
LOWER PUSHBUTTONS	
SET T	/ (Slash)
1 (CH 1)	a
2 (CH 2)	b
3 (CH 3)	c
4 (CH 4)	d
5 (CH 5)	e
SPECIAL COMMAND	
REMOTE/LOCAL MODE SELECTION	~ (Tilde) Alternately selects REMOTE ONLY and LOCAL modes.

2.0.2.2 Use Of Thermal Printer As A Line Printer

The 626's thermal printer can be made to function as a line printer by executing the following ASCII commands: (Units delivered November, 1982 or later).

~ (Tilde): Puts 626 in REMOTE ONLY Mode

{ (Open Bracket): Puts 626 in LINE PRINTER Mode

} (Close Bracket): Takes 626 out of LINE PRINTER Mode

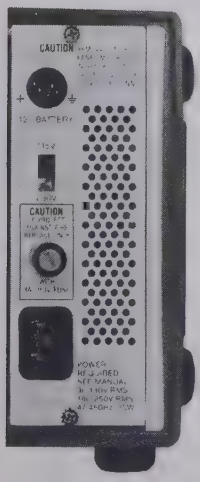
When used as a line printer, the 626 will print all data received via its RS-232C port. The data is *not* echoed back to the source. Printing is in 20 columns, with a carriage return automatically generated after the 20th column.

2.0.3 RS-232 PINOUTS and REMARKS

RS-232 PINOUTS	REMARKS
1: CHASIS GROUND	Tied internally to Pin 7
2: TRANSMIT DATA	Data INTO 626
3: RECEIVED DATA	Data FROM 626
4: REQUEST TO SEND	Must be made HIGH by external device
5: CLEAR TO SEND	626 provides HIGH
6: DATA SET READY	626 provides HIGH
7: SIGNAL GROUND	Tied internally to Pin 1
20: DATA TERMINAL READY	Must be made HIGH by external device

2.0.4 626 MODULE CAPACTIY

The 626 mainframe has the ability to house and control up to 5 plug-in modules. However, certain early units have maximum total load rating of 13 units. These may be distinguished by inspecting the power supply as shown below. Load ratings for individual plug-ins may be found in the Operator's Manuals.



Early models with this type of power supply will support plug-ins up to 13 Load Units.

Late models with this type of power supply will support plug-ins up to 20 Load Units.

3.0 CARE AND MAINTENANCE

3.1 BATTERIES

The internal UPS batteries are provided to perform two functions:

- They allow the 626 to continue full normal operation during a power outage (UPS function).
- They maintain the internal clock and memories during storage, even with the FUNCTION switch off.

3.1.1 Storage

It is recommended that a 626 with fresh batteries *connected* be stored unpowered for no longer than 3 weeks. If you plan a longer storage period, do either of the following:

- Store the 626 turned to OPERATE mode and plugged into an AC source.
- Contact the factory or refer to the service manual for assistance.

3.1.2 Symptoms of 626's With Discharged Batteries

The 626 will operate quite normally in its intended function as a Universal Disturbance Analyzer with discharged or missing batteries. Should the batteries discharge, there are three indications of this:

- When turned to OPERATE:

  POWER ON RESET will be accompanied by MEMORY INVALID message, indicating no retention of last program set-ups. 626 will automatically recall and use PRESET values for all plug-ins. Clock will start from approximately 00:00:00.00.
- During Operation:

  There will be no UPS operation.
- When turned OFF:

  The usual POWER OFF message will be omitted.

3.1.3 Recharge

The 626 should be able to recharge its batteries within 6–10 hours. Should the batteries not accept a charge, do either of the following:

- Recharge the batteries following a procedure available from our Customer Service Department (CSD).

- Contact our CSD to obtain an exchange battery pack.

3.2 PRINTER AND PAPER TAPE

3.2.1 Installation of Paper Tape

The analyzer is shipped with a roll of paper already installed. During operation, when the paper supply becomes low, the unit will automatically print PAPER LOW (and operation will be shifted to the SUMMARY ONLY mode), indicating that the paper roll should be replaced. Replace paper roll while some paper is still left in the printer. If this is not done, refer to procedure in Operator's Manual. Before replacing the thermally sensitive paper, clean the printhead as described below. After cleaning the printhead, replace the paper roll as follows:

1. Pull out the two black cover latches and lower the cover.
2. Tear paper roll just above old roll. Do *not* remove remaining paper from printer.
3. Push two spring paper holders outward to release old paper roll and remove roll.
4. Remove holding tab from new paper roll to release end of roll. Use a scissors to cut the edge of the paper straight.
5. Holding the paper roll so that it unrolls from the *bottom* toward the *back* of the 626, expand the two spring paper holders. Install the roll, then release the holders to lock the roll in place.
6. Ensuring that the new paper is aligned correctly to avoid jamming, insert the cut end between the rubber roller and the remaining old paper so that the old and new paper overlap.
7. Depress and hold FEED pushbutton until the new paper comes into view and the old paper is completely out of the printer.
8. Raise the cover and guide paper through the opening. Then lock cover in place.

3.2.2 Cleaning Printhead

To clean the printhead in the simplest and preferred method, particles may be removed by inserting a length of bond paper (approximately 10 inches in length cut to width of 2.25 inches) into the printer. Operate the printer by pressing the DATA button until the length of paper passes through the printer. Insert this paper in the same manner as if replacing the paper roll. Strips of bond paper already cut to size are provided with each 626.

SETTING 626 TIME CLOCK

The 626 retains its time setting even when turned OFF. However, if the time must be changed, proceed as follows:

1. Depress the SET T pushbutton.

2. Turn the FUNCTION SWITCH to PROGRAM. The message shown below will be printed, showing the present time:

```
TIME = 15:55:06.03

PROGRAM MODE
```

Now proceed as cued by the lights. We will reset the time to 14:55:00:00.

LIGHTS	KEY SEQUENCE	PRINTOUT
2 YELLOW	[1] [4]	None
1 YELLOW	[•••]	None
2 YELLOW	[5] [5]	None
1 GREEN	[ENTER]	TIME = 14:55:00.01

(The 2 Yellow Lights light again, allowing the operator to make desired changes.)

SINGLE-PHASE AC PLUG-IN MODULE

626-PA-6001

1.0 INTRODUCTION

The 626-PA-6001 monitors AC voltage, 45-65 HZ, 50-600 VAC. It is available in 4 versions:

626-PA-6001-1: 1Ø AC, 50-600 VAC, 45-65 HZ, Barrier Strip Input and 60 HZ SYSTEM CHECK. No accessories.

626-PA-6001-2: 1Ø AC, 50-600 VAC, 45-65 HZ, Connector Input and 60 HZ SYSTEM CHECK. Includes mating cable with connector at one end, and bare leads at other end.

626-PA-6001-3: 1Ø AC, 50-600 VAC, 45-65 HZ, Barrier Strip Input and 50 HZ SYSTEM CHECK. No accessories.

626-PA-6001-4: 1Ø AC, 50-600 VAC, 45-65 HZ, Connector Input and 50 HZ SYSTEM CHECK. Includes mating cable with connector at one end, and bare leads at other end.

2.0 626-PA-6001 OPERATION

The 626-PA-6001 uses an operating program which assigns the following parameters, defined in Section 1.2 of the Mainframe portion of this User's Guide. Permissible value are as shown:

626-PA-6001 PARAMETERS	FORMAT (# OF ENTRIES)	PERMISSIBLE VALUES		
RANGE	3 XXX	200	400	600
HI LIMIT	3 XXX	021-200	042-400	084-600
LO LIMIT	3 XXX	020-199	040-398	080-596
V SENS	2 XX	01-15	02-30	04-60
FREQ SENS	3 X.X	0.2-3.0	0.2-3.0	0.2-3.0
IMP SENS	4 XXXX	0025-1000	0050-2000	0100-4000

2.1 PROGRAMMING THE 626-PA-6001

Programming the 626-PA-6001 should be an infrequent task since the 626 retains all set-ups even when turned off. When programming is required, proceed as follows:

1. Select the plug-in to be programmed by depressing the pushbutton (1-5).
2. Turn the FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed, showing how the 626-PA-6001 is currently programmed.
3. A RED LED will light, opposite the RANGE pushbutton. Depress the RANGE pushbutton. Follow the printed instructions and proceed with Step 4.
4. The RED LED above the 12 RED pushbuttons is now lit. As an example, the programming of this set-up will be illustrated:

IMPULSE SENS	0150 V
FREQ SENS	00.4 HZ
VOLTAGE SENS	005 V
V LOW LIMIT	095 V
V HIGH LIMIT	140 V
RANGE	200 V (Set in Step 3)

	LIGHTS	KEY SEQUENCE	PRINTOUT
HI LIMIT	1 RED	[HI LIMIT]	None
	3 YELLOW	[1] [4] [0]	None
	1 GREEN	[ENTER]	V HIGH LIMIT 140 V
LO LIMIT	1 RED	[LO LIMIT]	None
	3 YELLOW	[0] [9] [5]	None
	1 GREEN	[ENTER]	V LOW LIMIT 095 V

(Continued on next page.)

(Continued from previous page.)

	LIGHTS	KEY SEQUENCE	PRINTOUT
OLTAGE SENS	1 RED	[SENS]	None
	2 YELLOW	[0] [5]	None
	1 GREEN	[ENTER]	VOLTAGE SENS 005 V
REQ ENS	1 RED	[F SENS]	None
	1 YELLOW	[0]	None
	1 YELLOW	[.]	None
	1 YELLOW	[4]	None
	1 GREEN	[ENTER]	FREQ SENS 0 4HZ
PULSE SENS	1 RED	[IMP SENS]	None
	4 YELLOW	[0] [1] [5] [0]	None
	1 GREEN	[ENTER]	IMPULSE SENS 0150V

fer to notes on next page.

Notes

1. After selecting the desired range other parameters may be programmed in any order.
2. If any attempt is made to program HIGH LIMIT $\leqslant$ LOW LIMIT (or LOW LIMIT $\geqslant$ HIGH LIMIT), the entered value is accepted and the other limit is forced to a value such that HIGH LIMIT $>$ LOW LIMIT, with the minimum acceptable differential.
3. If any parameter is entered which is unacceptable for the chosen range, the message

OR

is printed, as appropriate. The operator is then cued, with the yellow lights, to try again.

4. If the wrong parameter is selected, simply re-program that value before proceeding to the desired parameter.
5. If incorrect values are selected, before pushing the ENTER key, depress the CLEAR ENTRY key and select the proper values.

2.2 SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch t PROGRAM. A PROGRAM SUMMARY will be printed.
2. Depress PRESET pushbutton. The PRESET program will b loaded into the mainframe CPU. PRESET values will be printe in a new PROGRAM SUMMARY.

2.3 SYSTEM CHECK

Normal values are as follows:

Impulse: +160 V PK

Voltage: 120.0 VRMS

Frequency: 626-PA-6001-1,2: 60 HZ
626-PA-6001-3,4: 50 HZ

Tolerances are:

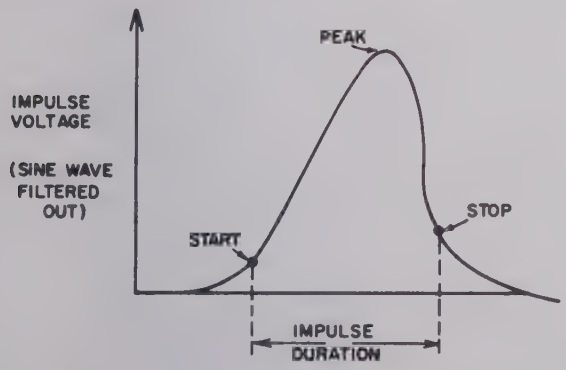
S. RANGE	IMPULSE	VOLTAGE	FREQUENCY
200	+134 to +186 V PK	118.4 to 121.6 V	49.8 to 50.2 HZ OR 59.8 to 60.2 HZ
400	+124 to +196 V PK	118.0 to 122.0 V	49.8 to 50.2 HZ OR 59.8 to 60.2 HZ
600	+114 to +206 V PK	117.6 to 122.4 V	49.8 to 50.2 HZ OR 59.8 to 60.2 HZ

.0 626-PA-6001 OPTIONS

All 626 Series options are intended for installation at time of original anufacture. None are field retrofittable.

1 OPTION 101 FOR 626-PA-6001 SERIES (NOT COMPATIBLE WITH OPTION 102)

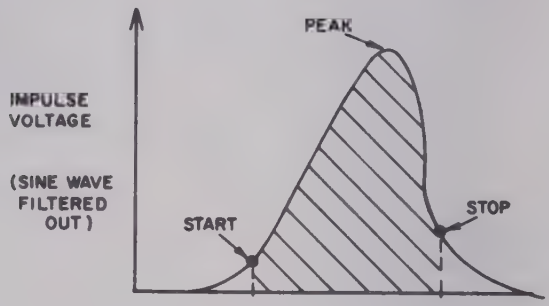
This option adds the ability to measure impulse duration and direction the 626-PA-6001 Series. A clamp-on current probe (TR-2010) is included determine direction, or whether the impulse is coming from the voltage OURCE or the LOAD. Impulse duration is measured in microseconds, as own below:



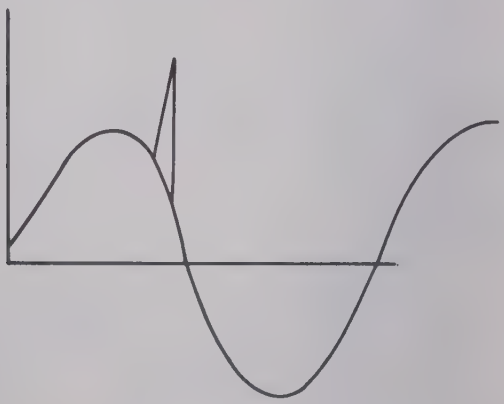
Impulse duration measurement starts when the impulse reaches approx- ately 20 volts, and stops when the impulse falls to approximately 1/3 of e peak value.

3.2 OPTION 102 FOR 626-PA-6001 SERIES (NOT COMPATIBLE WITH OPTION 101)

This option adds the ability to measure impulse strength and direction to the 626-PA-6001 Series. A clamp-on current probe (TR-2010) is included to determine direction. Impulse strength is measured in volt-seconds, as shown.



Impulse strength is an integration of impulse voltage versus time as defined by the IEEE. The volt-second "area" is impulse strength.



Note

Impulses in the above illustrations are actually superimposed on the AC sine wave as shown.

.3 OPTION 103 FOR 626-PA-6001 SERIES

This option allows the user to specify a special set of values for the RESET values for a 626-PA-6001. Any set of values drawn from the "formats" and "permissible values" listings in Section 2.0 may be specified.

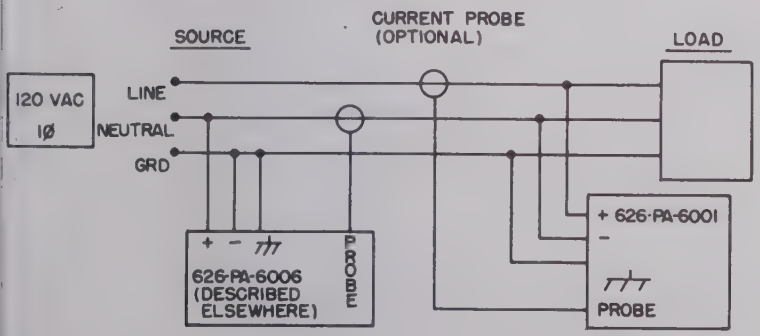
.0 APPLICATIONS FOR 626-PA-6001 SERIES

WARNING

Connection should only be performed by qualified personnel. Conductors connecting to measurement points should be approved for the specific use. When connected to branch circuits of 20 amperes or less, minimum flexible cord size is No. 18 (1 mm^2). For branch circuits with higher ampacity, refer to National Electric Code (ANSI CI-1975 Para. 240-4 and Para. 250-95). Special consideration of ground may be required. Refer to Article 250 of above reference if in doubt. Outside U.S.A. consult applicable safety standards.

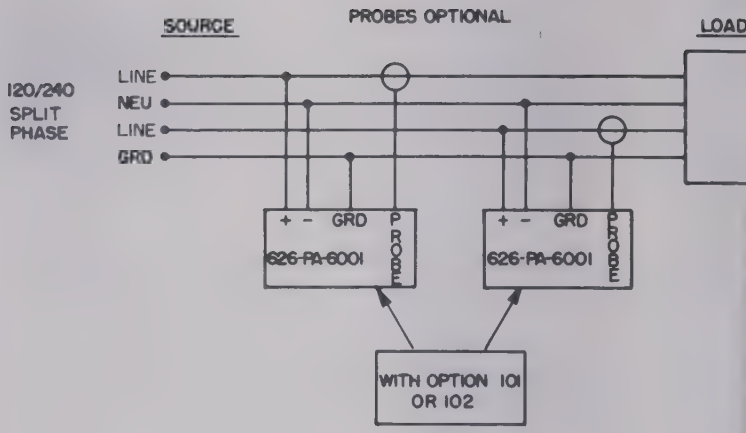
The single phase AC monitor is commonly used alone to monitor a ngle AC phase, line-to-neutral; or in multiples, to monitor 3 Ø or split-nase sources. Note that the plug-in monitors *only* the voltage difference tween its + and - inputs, with the ⏚ input acting only as a mmon grounding point. *The ⏚ input is tied to the safety ounding conductor in the 626 power plug, so be careful not to inadver-ntly contaminate a "clean" computer power ground with a "dirty" build-g ground.*

The single phase AC monitor is frequently used with the built-in npulse duration/direction option. This application will be illustrated here:

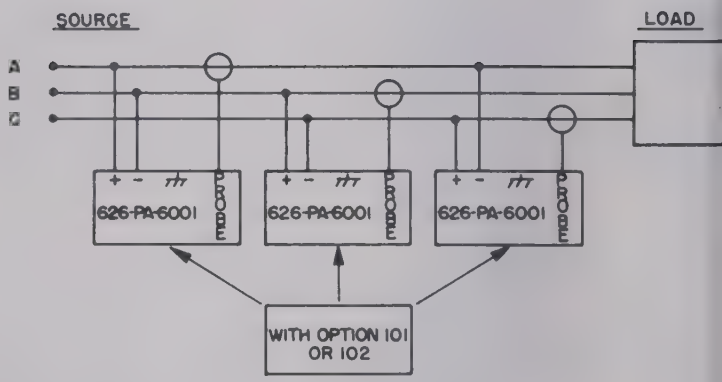


Note

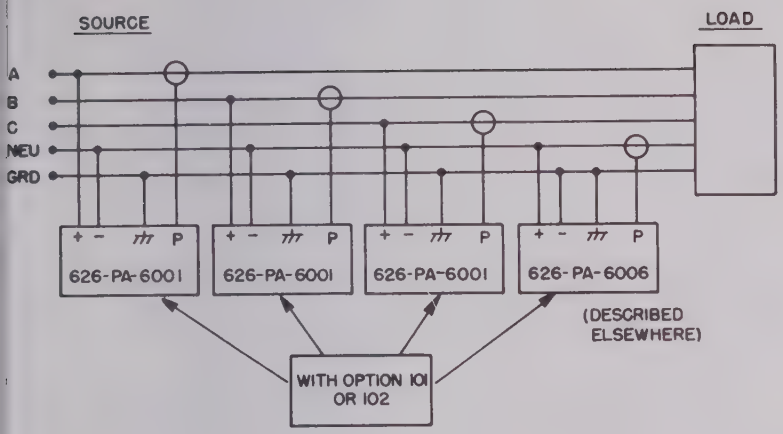
Current probes are included with Option 101 or 102 for 626-PA-6001.



3 Phase Delta



Phase Wye



.0 OPTIONAL ACCESSORIES

P/N 110480-G1 is an 8 foot AC cable with a connector to mate with ıe 626-PA-6001-2 and 626-PA-6001-4. This cable has bare wires at the free ıd. P/N 110480-G2 with battery clips attached is also available.

LOW RANGE DC PLUG-IN MODULE

626-PA-6002A

1.0 INTRODUCTION

The 626-PA-6002A monitors DC voltage, 0.5 – 80.0 VDC. It is available in two versions:

626-PA-6002-A1: 1 Channel DC, 0.5 – 80.0 VDC, with Barrier Strip Input. No accessories.

626-PA-6002-A2: 1 Channel DC, 0.5 – 80.0 VDC, with Connector Input. Includes mating cable with connector at one end, and banana plugs and push-on wire grippers at the other end.

2.0 OPERATION

The 626-PA-6002A uses an operating program which assigns the following parameters, defined in Section 1.2 of the mainframe portion of this User's Guide. Permissible values are as shown:

626-PA-6002A PARAMETERS	FORMAT (# OF ENTRIES)	PERMISSIBLE VALUES		
RANGE	2 XX	20	40	80
HI LIMIT	4 XX.X	00.6-20.0	01.2-40.0	02.4-80.0
LO LIMIT	4 XX.X	00.5-19.9	01.0-39.8	02.0-79.6
V SENS	4 XX.X	00.1-05.0	00.2-10.0	00.4-20.0
IMP SENS	4 XX.X	00.5-20.0	01.0-40.0	02.0-80.0

2.1 PROGRAMMING THE 626-PA-6002A

Programming the 626-PA-6002A should be an infrequent task, since the 626 retains all set-ups even when turned off. When programming is required, proceed as follows:

1. Select the plug-in to be programmed by depressing the pushbutton (1-5).
2. Turn the FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed, showing how the 626-PA-6002A is currently programmed.
3. A RED LED will light, opposite the RANGE pushbutton. Depress the RANGE pushbutton. Follow the printed instructions and proceed with Step 4.

4. The RED LED above the 12 RED pushbuttons is now lit. As an example, the programming of this set-up will be illustrated.

IMPULSE SENS	02.0 V	
VOLTAGE SENS	00.2 V	
V LOW LIMIT	04.9	
V HIGH LIMIT	05.1	
RANGE	20 V	(Programmed in Step 3)

	LIGHTS	KEY SEQUENCE	PRINTOUT
HI LIMIT	1 RED	HI LIMIT	None
	2 YELLOW	0 5	None
	1 YELLOW		None
	1 YELLOW	1	None
	1 GREEN	ENTER	V HIGH LIMIT 05.1V
LO LIMIT	1 RED	LO LIMIT	None
	2 YELLOW	0 4	None
	1 YELLOW		None
	1 YELLOW	9	None
	1 GREEN	ENTER	V LOW LIMIT 04.9V

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	LIGHTS	KEY SEQUENCE	PRINTOUT
V SENS	1 RED	SENS	None
	2 YELLOW	0 0	None
	1 YELLOW	▪	None
	1 YELLOW	2	None
	1 GREEN	ENTER	VOLTAGE SENS 00.2V
IMPULSE SENS	1 RED	IMP SENS	None
	2 YELLOW	0 2	None
	1 YELLOW	▪	None
	1 YELLOW	0	None
	1 GREEN	ENTER	IMPULSE SENS 02.0V

Notes

1. After selecting the desired range other parameters may be programmed in any order.
2. If any attempt is made to program High Limit $\leqslant$ Low Limit (or Low Limit $\geqslant$ High Limit), the entered value is accepted and the other limit is forced to a value such that High Limit $>$ Low Limit, with the minimum acceptable differential.
3. If any parameter is entered which is unacceptable for the chosen range, the message

ENTRY TOO LOW

OR

ENTRY TOO HIGH

is printed, as appropriate. The operator is then cued, with the yellow lights, to try again.

4. If the wrong parameter is selected, simply re-program that value before proceeding to the desired parameter.
5. If incorrect values are selected, before pushing the ENTER key depress the CLEAR ENTRY key and select the proper values.

2.2 SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed.
2. Depress PRESET pushbutton. The PRESET program will be loaded into the mainframe CPU. PRESET values will be printed in a new PROGRAM SUMMARY.

2.3 SYSTEM CHECK

Normal values are as follows:

Impulse: +10.00 V PK

Voltage: 5.00 VDC

Tolerances are:

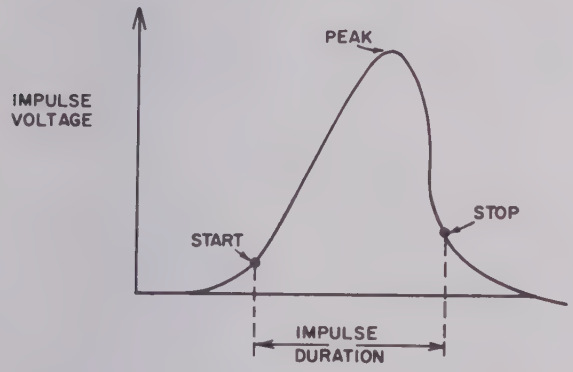
F.S. RANGE	IMPULSE	VOLTAGE
20 V	8.8 to 11.2 V PK	4.85 to 5.15 V
40 V	8.6 to 11.4 V PK	4.75 to 5.25 V
80 V	8.2 to 11.8 V PK	4.55 to 5.45 V

3.0 626-PA-6002A OPTIONS

All 626 series options are intended for installation at time of original manufacture. None are field retrofittable.

3.1 OPTION 101 FOR 626-PA-6002 SERIES (NOT COMPATIBLE WITH OPTION 102)

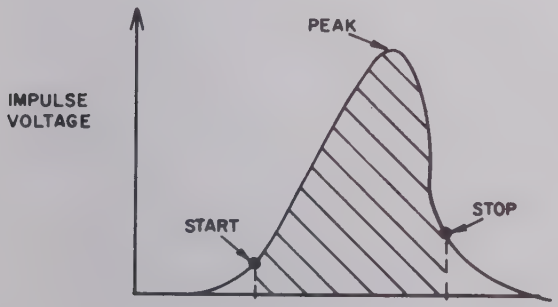
This option adds the ability to measure impulse duration, up to 2000 μ sec, as shown:



Impulse duration measurement starts when the impulse reaches approximately 0.4 volts, and stops when the impulse falls to approximately 1/3 of the peak value.

3.2 OPTION 102 FOR 626-PA-6002 SERIES (NOT COMPATIBLE WITH OPTION 101)

This option adds the ability to measure impulse strength, as shown:



Impulse strength is an integration of impulse voltage versus time as defined by the IEEE. The volt-second "area" is impulse strength.

3.3 OPTION 103 FOR 626-PA-6002 SERIES

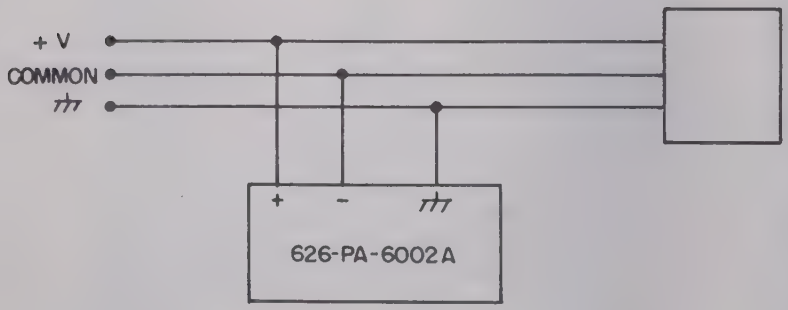
This option allows the user to specify a special set of values for the PRESET values for a 626-PA-6002A. Any set of values drawn from the "formats" and "permissible values" listings in Section 2.0 may be specified.

4.0 APPLICATIONS FOR THE 626-PA-6002A

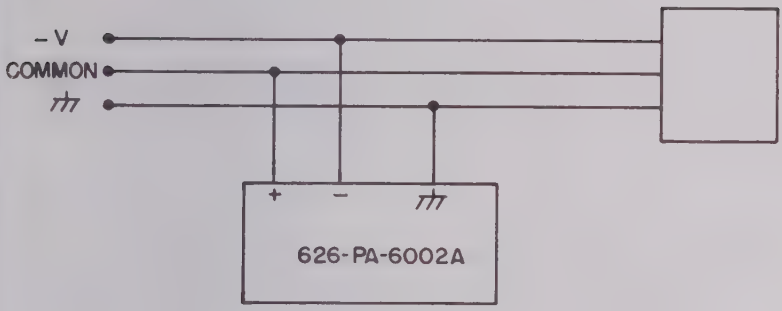
WARNING

Connection should only be performed by qualified personnel. Conductors connecting to measurement points should be approved for the specific use. When connected to branch circuits of 20 amperes or less, minimum flexible cord size is No. 18 (1 mm^2). For branch circuits with higher ampacity, refer to National Electric Code (ANSI CI–1975 Para. 240–4 and Para. 250–95). Special consideration of ground may be required. Refer to Article 250 of above reference if in doubt. Outside U.S.A. consult applicable safety standards.

Connection to Positive DC Sources



Connection to Negative DC Sources



5.0 OPTIONAL ACCESSORIES

P/N 110475 is an 8 foot cable for use with the 626-PA-6002-A2. Its free end has banana plugs for the (+) and (-) inputs, and an alligator clip for the ground.

HIGH RANGE DC PLUG-IN MODULE

626-PA-6002C

.0 INTRODUCTION

The 626-PA-6002C monitors DC voltage, 25-600 VDC. It is available nly with Barrier Strip Input. No accessories are provided.

.0 OPERATION

The 626-PA-6002C uses an operating program which assigns the follow-ng parameters, defined in Section 1.2 of the Mainframe portion of this Jser's Guide. Permissible values are as shown:

626-PA-6002C ARAMETERS	FORMAT (# OF ENTRIES)		PERMISSIBLE VALUES		
RANGE	3	XXX	150	300	600
HI LIMIT	3	XXX	026-150	052-300	104-600
LO LIMIT	3	XXX	025-149	050-298	100-596
V SENS	2	XX	01-15	02-30	04-60
MP SENS	4	XXXX	0025-0500	0050-1000	0100-2000

.1 PROGRAMMING THE 626-PA-6002C

Programming the 626-PA-6002C should be an infrequent task, since the 626 retains all set-ups even when turned off. When programming is required, proceed as follows:

1. Select the plug-in to be programmed by depressing the pushbutton (1-5).

2. Turn the FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed, showing how the 626-PA-6002C is currently programmed.

3. A RED LED will light, opposite the RANGE pushbutton. Depress the RANGE pushbutton. Follow the printed instructions and proceed with Step 4.

4. The RED LED above the 12 RED pushbuttons is now lit. As an example, the programming of this set-up will be illustrated:

IMPULSE SENS	0150 V
VOLTAGE SENS	005 V
V LOW LIMIT	095 V
V HIGH LIMIT	140 V

	LIGHTS	KEY SEQUENCE	PRINTOUT
HI LIMIT	1 RED	[HI LIMIT]	None
	3 YELLOW	[1] [4] [0]	None
	1 GREEN	[ENTER]	V HIGH LIMIT 140
LO LIMIT	1 RED	[LO LIMIT]	None
	3 YELLOW	[0] [9] [5]	None
	1 GREEN	[ENTER]	V LOW LIMIT 095
V SENS	1 RED	[SENS]	None
	2 YELLOW	[0] [5]	None
	1 GREEN	[ENTER]	VOLTAGE SENS 005

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Notes

1. After selecting the desired range other parameters may be programmmed in any order.
2. If any attempt is made to program High Limit $\leqslant$ Low Limit (or Low Limit $\geqslant$ High Limit), the entered value is accepted and the other limit is forced to a value such that High Limit $>$ Low Limit, with the minimum acceptable differential.
3. If any parameter is entered which is unacceptable for the chosen range, the message

ENTRY TOO HIGH

OR

ENTRY TOO LOW

is printed, as appropriate. The operator is then cued, with the yellow lights, to try again.

4. If the wrong parameter is selected, simply re-program that value before proceeding to the desired parameter.
5. If incorrect values are selected, before pushing the ENTER key, depress the CLEAR ENTRY key and select the proper values.

SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed.
2. Depress PRESET pushbutton. The PRESET program will be loaded into the mainframe CPU. PRESET values will be printed in a new PROGRAM SUMMARY.

2.3 SYSTEM CHECK

Normal values are as follows:

Impulse: +160 V PK
Voltage: 120.0 VDC

Tolerances are:

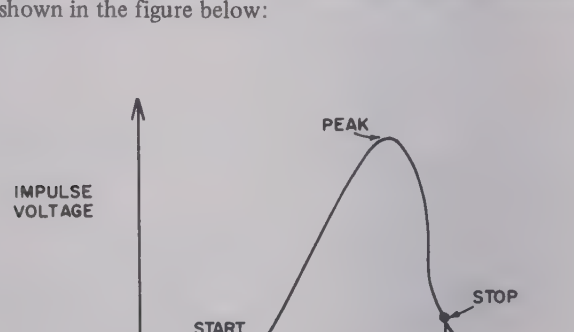
F.S. RANGE	IMPULSE	VOLTAGE
150	134 to 186 V PK	118.0 to 122.0 VDC
300	124 to 196 V PK	117.3 to 122.7 VDC
600	104 to 216 V PK	115.8 to 124.2 VDC

3.0 626-PA-6002C OPTIONS

All 626 series options are intended for installation at time of origin manufacture. None are field retrofittable.

3.1 OPTION 101 FOR 626-PA-6002 SERIES (NOT COMPATIBLE WITH OPTION 102)

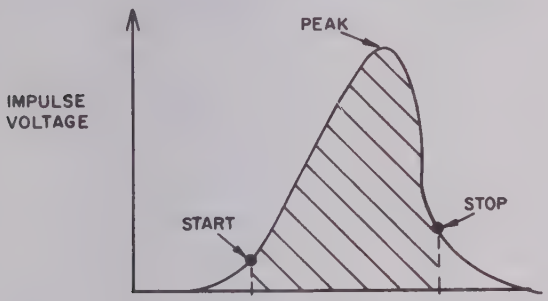
This option adds the ability to measure impulse duration, up to 200 μ sec, as shown in the figure below:



Impulse duration measurement starts when the impulse reaches approx mately 20 volts, and stops when the impulse falls to approximately 1/3 the peak value.

OPTION 102 FOR 626-PA-6002 SERIES (NOT COMPATIBLE WITH OPTION 101)

This option adds the ability to measure impulse strength, as shown:



ulse strength is an integration of impulse voltage versus time as defined the IEEE. The volt-second "area" is impulse strength.

OPTION 103 FOR 626-PA-6002 SERIES

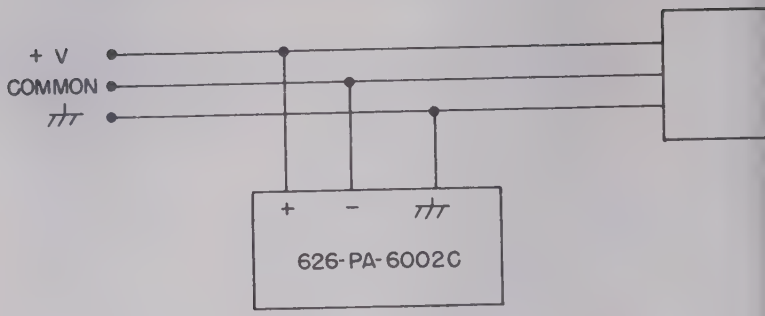
This option allow the user to specify a special set of values for the ESET values for a 626-PA-6002C. Any set of values drawn from the rmats" and "permissible values" listings in Section 2.0 may be specified.

APPLICATIONS FOR THE 626-PA-6002C

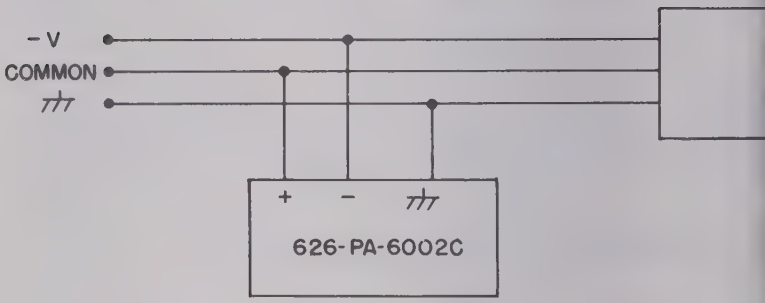
WARNING

Connection should only be performed by qualified personnel. Conductors connecting to measurement points should be approved for the specific use. When connected to branch circuits of 20 amperes or less, minimum flexible cord size is No. 18 (1 mm^2). For branch circuits with higher ampacity, refer to National Electric Code (ANSI CI–1975 Para. 240–4 and Para. 250–95). Special consideration of ground may be required. Refer to Article 250 of above reference if in doubt. Outside U.S.A. consult applicable safety standards.

Connections to Positive DC Sources



Connection to Negative DC Sources



THREE-PHASE AC PLUG-IN MODULE

626-PA-6003

0 INTRODUCTION

The 626-PA-6003 monitors 3 phase AC voltage, wye or delta, 50–600 AC, 45–65 HZ. It is available in two versions, as shown below:

626-PA-6003-1: 3 Phase AC, 50–600 VAC, 45–65 HZ, Barrier Strip Inputs. No accessories.

626-PA-6003-2: 3 Phase AC, 50–600 VAC, 45–65 HZ, Connector Inputs. Includes 3 cables with mating connectors on one end and bare wires at the other end.

0 OPERATION

The 626-PA-6003 uses an operating program which assigns the following parameters defined in Section 1.2 of the Mainframe portion of this User's Guide. Permissible values are as shown:

626-PA-6003 PARAMETERS	FORMAT (# OF ENTRIES)	PERMISSIBLE VALUES
HI LIMIT	3 XXX	051-600
LO LIMIT	3 XXX	050-599
V SENS	2 XX	02-60
FREQ SENS	3 X.X	0.2-3.0
IMP SENS	4 XXXX	0050-4000

.1 PROGRAMMING THE 626-PA-6003

Programming the 626-PA-6003 should be an infrequent task, since the 26 retains all set-ups even when turned off. When programming is required, roceed as follows:

1. Select the plug-in to be programmed by depressing the pushbutton (1-5).
2. Turn the FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed, showing how the plug-in is currectly programmed.
3. The RED LED above the 12 RED pushbuttons is now lit. As an example, the programming of this set-up will be illustrated:

IMPULSE SENS	0150 V
FREQ SENS	00.4 HZ
VOLTAGE SENS	005 V
V LOW LIMIT	095 V
V HIGH LIMIT	140 V

	LIGHTS	KEY SEQUENCE	PRINTOUT
HI LIMIT	1 RED	[HI LIMIT]	None
	3 YELLOW	[1] [4] [0]	None
	1 GREEN	[ENTER]	␣HIGH LIMIT 140
LO LIMIT	1 RED	[LO LIMIT]	None
	3 YELLOW	[0] [9] [5]	None
	1 GREEN	[ENTER]	V LOW LIMIT 095
V SENS	1 RED	[SENS]	None
	2 YELLOW	[0] [5]	None
	1 GREEN	[ENTER]	VOLTAGE SENS 005

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	LIGHTS	KEY SEQUENCE	PRINTOUT
FREQ SENS	1 RED	F SENS	None
	1 YELLOW	0	None
	1 YELLOW	• •	None
	1 YELLOW	4	None
	1 GREEN	ENTER	FREQ SENS 0.4HZ
IMPULSE SENS	1 RED	IMP SENS	None
	4 YELLOW	0 1 5 0	None
	1 GREEN	ENTER	IMPULSE SENS 0150U

Notes

1. The parameters may be programmed in any order.
2. If any attempt is made to program High Limit $\leq$ Low Limit (or Low Limit $\geq$ High Limit), the entered value is accepted and the other limit is forced to a value such that High Limit $>$ Low Limit, with the minimum acceptable differential.

3. If any parameter is entered which is unacceptable, the message

ENTRY TOO HIGH

OR

ENTRY TOO LOW

is printed, as appropriate. The operator is then cued, with the yellow lights and printed messages, to try again.

4. If the wrong parameter is selected, simply re-program that value before proceeding to the desired parameter.
5. If incorrect values are selected, before pushing the ENTER key, depress the CLEAR ENTRY key and select the proper values.

2.2 SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed.
2. Depress PRESET pushbutton. The PRESET program will be loaded into the mainframe CPU. PRESET values will be printed in a new PROGRAM SUMMARY.

2.3 SYSTEM CHECK

Normal values are as follows:

AC VOLTAGE	200.0 VAC
IMPULSE PEAK	3000 Volts
IMPULSE DURATION	400 μ sec
FREQUENCY	60.0 Hz

Tolerances are:

AC VOLTAGE	196.0 – 204.0 Volts
IMPULSE PEAK	2700 – 3300 Volts
IMPULSE DURATION	360 – 440 μ sec
FREQUENCY	59.8 – 60.2 HZ

3.0 626-PA-6003 OPTIONS

All 626 series options are intended for installation at time of original manufacture. None are field retrofittable.

3.1 OPTION 101 FOR 626-PA-6003 SERIES

This option allows the user to specify a special set of values for the PRESET values for a 626-PA-6003. Any set of values drawn from the "FORMATS" and "PERMISSIBLE VALUES" listings in Section 2.0 may be specified.

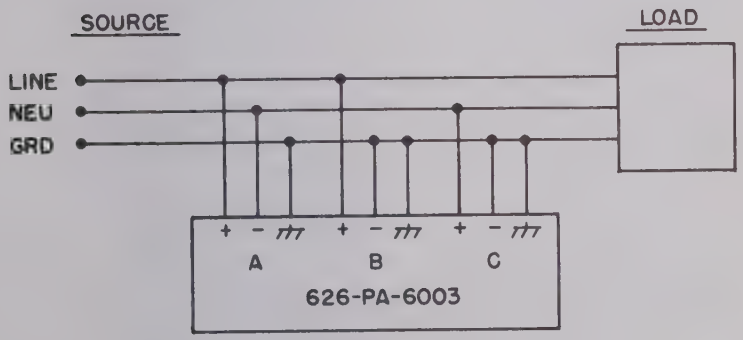
WARNING

Connection should only be performed by qualified personnel. Conductors connecting to measurement points should be approved for the specific use. When connected to branch circuits of 20 amperes or less, minimum flexible cord size is No. 18. (1 mm^2). For branch circuits with higher ampacity, refer to National Electric Code (ANSI CI–1975 Para. 240–4 and Para. 250–95). Special consideration of ground may be required. Refer to Article 250 of above reference if in doubt. Outside U.S.A. consult applicable safety standards.

4.0 APPLICATIONS FOR 626-PA-6003

The 3Ø AC monitor for 45-65 Hz may be used for 3Ø Wye, 3Ø Delta, or for up to three separate AC signals. It may be used by itself to do Normal Mode/Common Mode analysis on 1 phase lines, or in combination with a 626-PA-6006 to do Normal Mode/Common Mode analysis on a 3 phase wye line.

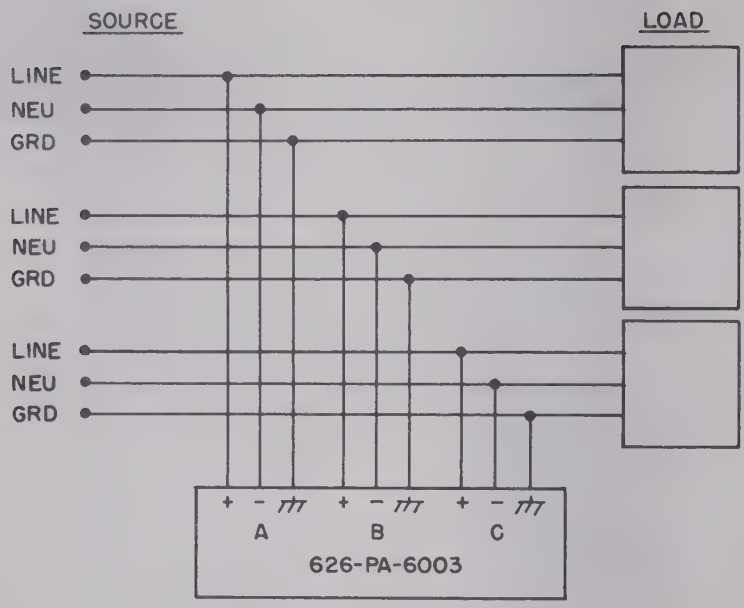
1 Phase Normal Mode/Common Mode



Readings:

Channel A: LINE-Neutral
Channel B: LINE-Ground
Channel C: Neutral-Ground

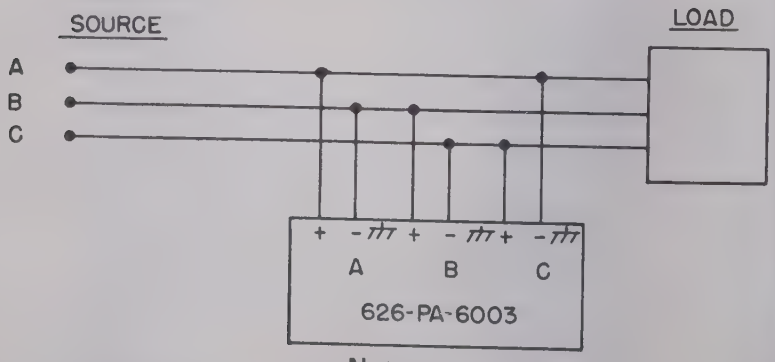
3 Separate AC Lines



Notes

1. All Channels are monitored independently.
2. All line frequencies must be the same.
3. All 3 channels will have same program set-up.

3 Phase Delta



Notes

1. Delta may be grounded or ungrounded.
2. Set 626-PA-6003 to monitor line-to-line voltage, e.g.: For 240 volt delta, set High and Low Limits to either side of 240 VAC.

3 Phase Wye

Notes

1. 626-PA-6006 is added to perform Neutral-Ground (COMMON mode) monitoring.
2. Wye distribution is normally monitored LINE-to-Neutral, e.g., A 120/208 wye would be monitored with 626-PA-6003 High and Low Limits set to either side of 120.
3. To monitor wye system line-to-line, set High and Low Limits to either side of higher stated voltage, and connect to 626-PA-6003 as though lines A, B, and C were from a delta, e.g., A 120/208 wye would be monitored with 626-PA-6003 High and Low Limits set to either side of 208.

AC NEUTRAL-GROUND PLUG-IN MODULE

626-PA-6006

1.0 INTRODUCTION

The 626-PA-6006 monitors AC voltage, 2 – 50 VAC, 45 – 65 HZ. It is available in two versions, as shown below:

626-PA-6006-1: Neutral-Ground AC, Barrier Strip Input. No accessories.

626-PA-6006-2: Neutral-Ground AC, Connector Input. Includes a cable with a mating connector at one end and bare leads at the other end.

2.0 OPERATION

The 626-PA-6006 uses an operating program which assigns the following parameters, defined in Section 1.2 of the Mainframe portion of this User's Guide. Permissible values are as shown:

626-PA-6006 PARAMETERS	FORMAT (# OF ENTRIES)	PERMISSIBLE VALUES
HI LIMIT	2 XX	03-50
V SENS	1 X	1-9
IMP SENS	4 XXXX	0025-2000

2.1 PROGRAMMING THE 626-PA-6006

Programming the 626-PA-6006 should be an infrequent task, since the 626 retains all set-ups even when turned off. When programming is required, proceed as follows:

1. Select the plug-in to be programmed by depressing the pushbutton (1-5).
2. Turn the FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed, showing how the 626-PA-6006 is currently programmed.
3. The RED LED above the 12 RED pushbuttons is now lit. As an example, the programming of this set-up will be illustrated.

IMPULSE SENS	0150 V
VOLTAGE SENS	02 V
V HIGH LIMIT	05 V

	LIGHTS	KEY SEQUENCE	PRINTOUT
HIGH LIMIT	1 RED	[HI LIMIT]	None
	2 YELLOW	[0] [5]	None
	1 GREEN	[ENTER]	U HIGH LIMIT 005 U
VOLTAGE SENS	1 RED	[SENS]	None
	1 YELLOW	[2]	None
	1 GREEN	[ENTER]	VOLTAGE SENS 002 U
IMPULSE SENS	1 RED	[IMP SENS]	None
	4 YELLOW	[0] [1] [5] [0]	None
	1 GREEN	[ENTER]	IMPULSE SENS 0150U

Notes

1. The parameters may be programmed in any order.
2. If any parameter is entered which is unacceptable, the message

ENTRY TOO HIGH

OR

ENTRY TOO LOW

is printed, as appropriate. The operator is then cued, with the yellow lights and printed messages, to try again.

3. If the wrong parameter is selected, simply re-program that value before proceeding to the desired parameter.
4. If incorrect values are selected, before pushing the ENTER key, depress the CLEAR ENTRY key and select the proper values.

SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed.
2. Depress PRESET pushbutton. The PRESET program will be loaded into the mainframe CPU. PRESET values will be printed in a new PROGRAM SUMMARY.

SYSTEM CHECK

Normal values are as follows:

IMPULSE:	+160 Volts Peak
VOLTAGE:	30.0 VAC

Tolerances are:

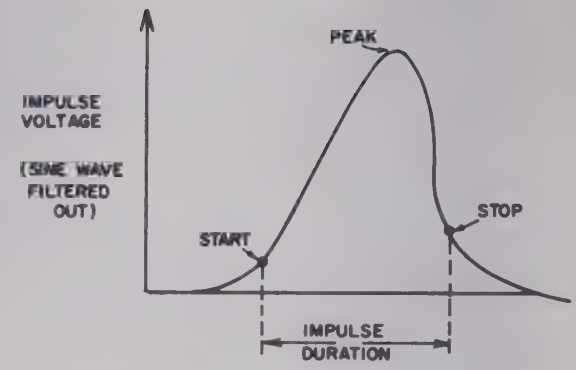
IMPULSE:	134 – 186 Volts Peak
VOLTAGE:	29.6 – 30.4 VAC

0 626-PA-6006 OPTIONS

All 626 Series options are intended for installation at time of original nufacture. None are field retrofittable.

1 OPTION 101 FOR 626-PA-6006 SERIES (NOT COMPATIBLE WITH OPTION 102)

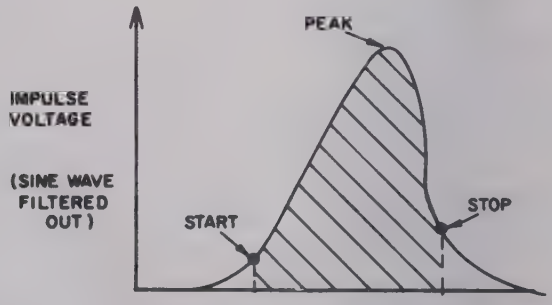
This option adds the ability to measure impulse duration and direction the 626-PA-6006 Series. A clamp-on current probe (TR-2010) is included determine direction, or whether the impulse is coming from the voltage OURCE or the LOAD. Impulse duration is measured in microseconds, as own on next page:



Impulse duration measurement starts when the impulse reaches approx
mately 20 volts, and stops when the impulse fall to approximately 1/3 of th
peak value.

3.2 OPTION 102 FOR 626-PA-6006 SERIES (NOT COMPATIBLE WITH OPTION 101)

This option adds the ability to measure impulse strength and directio
to the 626-PA-6006 Series. A clamp-on current probe (TR-2010) is include
to determine direction. Impulse strength is measured in volt-seconds, a
shown below:



Impulse strength is an integration of impulse voltage versus time as define
by the IEEE. The volt-second "area" is impulse strength.

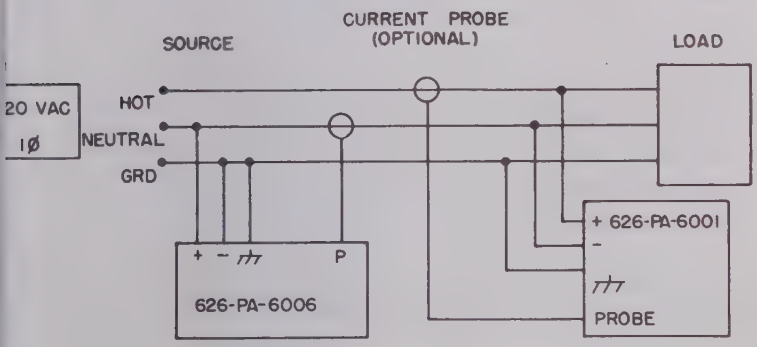
3 OPTION 103 FOR 626-PA-6006 SERIES

This option allows the user to specify a special set of values for the RESET values for a 626-PA-6006. Any set of values drawn from the "FORMATS" and "PERMISSIBLE VALUES" listings in Section 2.0 may be specified.

0 APPLICATIONS FOR 626-PA-6006

The 626-PA-6006 is used to monitor Neutral-Ground AC in single or multi-phase systems, usually in combination with the 626-PA-6001 or 626-PA-6003, as illustrated here:

Single Phase AC, with 626-PA-6001



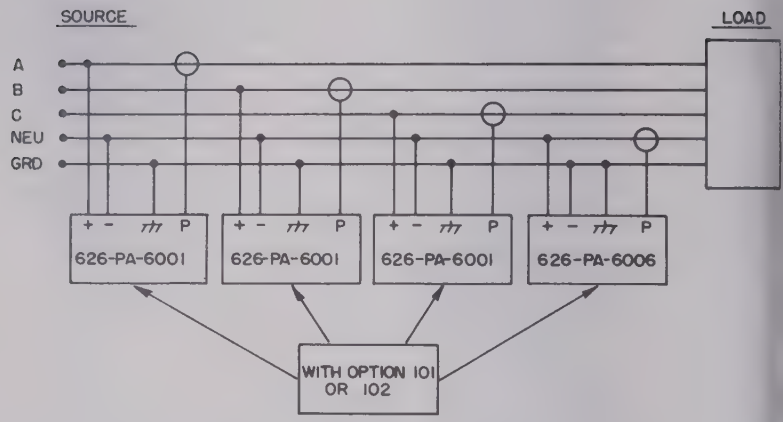
Note

Current probes are included with Option 101 and 102 for 626-PA-6001 Series and 626-PA-6006 Series.

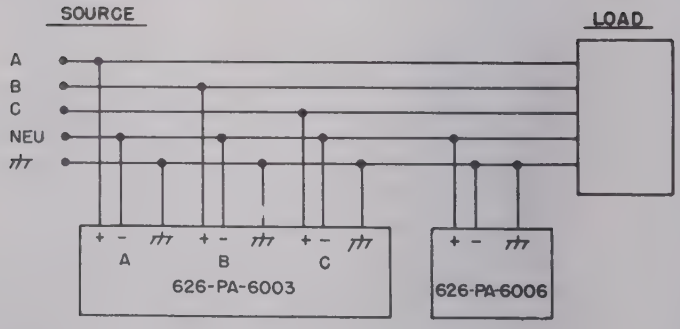
WARNING

Connection should only be performed by qualified personnel. Conductors connecting to measurement points should be approved for the specific use. When connected to branch circuits of 20 amperes or less, minimum flexible cord size is No. 18. (1 mm^2). For branch circuits with higher ampacity, refer to National Electric Code (ANSI CI–1975 Para. 240–4 and Para. 250–95). Special consideration of ground may be required. Refer to Article 250 of above reference if in doubt. Outside U.S.A. consult applicable safety standards.

3 Phase Wye, With 626-PA-6001



3 Phase Wye, With 626-PA-6003



EVENT MONITOR PLUG-IN MODULE

626-PA-6007

INTRODUCTION

The 626-PA-6007 monitors the state (Open-Closed, High-Low, On or f) of up to eight inputs. It identifies changes in state with a time resolu- of 10 milliseconds, with minimum (debounce) times ranging from 5 320 milliseconds minimum. It is available only with eight connector uts. Mating connectors are provided.

OPERATION

The 626-PA-6007 uses an operating program which assigns the follow- parameters:

- Minimum Time: 5, 10, 20, 40, 80, 160, or 320 msec

  (Note: To select 40, 80, or 160 msec, program unit for 320 msec and change internal jumper. See Instruction Manual TM-110280-1.)

- Polarity: 0 for Normally OPEN or LOW or OFF
  1 for Normally CLOSED or HIGH or ON

n input is programmed 0 (N/O), a low input will be considered NORMAL; gh input will be considered an ALARM. The converse is also true.

CONNECTION

Each input has a 3-pin connector, with inputs labeled +, -, and GND. uts should conform with these conditions:

1. To achieve a LOW or OFF input condition, the voltage difference between the + and - inputs should be +1.80 VDC or less.

2. To achieve a HIGH or ON input condition, the voltage difference between the + and - inputs should be +2.30 VDC minimum, +15.0 VDC maximum.

3. The maximum voltage which may be applied to either the + or - input is ±200 VDC with respect to the GND input.

PRINTOUTS

Printouts are unaffected by the choice of PRINTOUT MODE, unless MMARY ONLY is selected.

1. From the NORMAL to the ALARM condition:

   Example: A 626-PA-6007 in Slot 2. Input 3 goes from NORMAL to ALARM: `2 #3 A 12:34:56.78`

2. From the ALARM to the NORMAL condition:

   Example: A 626-PA-6007 in Slot 4. Input 8 goes from ALARM to NORMAL: `4 #8 N 01:23:45.67`

2.3 SUMMARIES

2.3.1 Program Summaries

```
P 0 1 1 0 1 1 0 1
# 1 2 3 4 5 6 7 8

MIN TIME=005 MSEC

    626-PA-6007
        CH 3

TIME = 15:29:55.30
 PROGRAM SUMMARY
```

Read Up

Explanation:

Top Line (P): A 0 indicates that OFF or LOW or OPEN is the NORMAL condition. A 1 indicates that ON or HIGH or CLOSED is NORMAL.

Second Line (#): Indicates the individual inputs (1–8).

Third Line: Minimum or debounce time may be programmed to 5, 10, 20, or maximum. Maximum may be jumper-selected to be 40, 80, 160, or 320 msec.

Fourth and Fifth Lines: Indicates a 626-PA-6007 is installed in Channel 3.

Bottom: A PROGRAM SUMMARY was requested at 15:29:55.30.

```
#8 A 0003 ALR HIT
#7 N 0000 ALR HIT
#6 A 0003 ALR HIT
#5 A 0003 ALR HIT
#4 N 0000 ALR HIT
#3 A 0003 ALR HIT
#2 A 0003 ALR HIT
#1 N 0000 ALR HIT

   626-PA-6007
       CH 3

TIME = 16:24:15.05
     DAY # 01
   DATA SUMMARY
```

Read Up

Explanation:

Top Section: Input channels 2, 3, 5, 6, and 8 are each in the ALARM state. Each has experienced 3 alarm hits.

Center: A 626-PA-6007 is installed in Channel 3 of a 626.

Bottom: A DATA SUMMARY was requested at 16:24:15.05 on Day 01.

PROGRAMMING THE 626-PA-6007

To program the 626-PA-6007 proceed as for any other plug-in. The OGRAM SUMMARY will be followed by the prompts:

```
TO CHANGE POLARITY
PRESS: '  SENS'
TO CHANGE MIN TIME
PRESS: 'F SENS'
```

We wish to set up the following program:

Minimum Time: 20 MSEC

Inputs:		
	#1 N/O	#5 N/C
	#2 N/O	#6 N/C
	#3 N/O	#7 N/C
	#4 N/O	#8 N/C

LIGHTS	KEY SEQUENCE	PRINTOUT
1 RED	F SENS	4 FOR 320 MSEC 3 FOR 20 MSEC 2 FOR 10 MSEC 1 FOR 5 MSEC PRESS
1 YELLOW	3	None
1 GREEN	ENTER	(Complete PROGRAM SUMMARY, Including Prompts
1 RED	SENS	0 FOR N/O OR OFF 1 FOR N/C OR ON ENTER 8 DIGITS
4 YELLOW	0 0 0 0	None
1 GREEN	ENTER	None
4 YELLOW	1 1 1 1	None
1 GREEN	ENTER	(Complete PROGRAM SUMMARY Including Prompts

Notes

1. The programming may be done in either possible sequence.
2. If an incorrect digit is entered, the original prompt will be repeated.
3. If the wrong parameter is selected, simply re-program the desired set-up before proceeding to the desired parameter.
4. If incorrect values are selected, before pushing the ENTER key, depress the CLEAR ENTRY key and select the proper values.

2.5 SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed.

2. Depress PRESET pushbutton. The PRESET program will be loaded into the mainframe CPU. PRESET values will be printed in a new PROGRAM SUMMARY.

2.6 SYSTEM CHECK

When the PRINTOUT MODE switch is set to CALIBRATE, board status is checked and a SYSTEM CHECK printout is produced. If the 626-PA-6007 module is determined to be good, the following is printed:

```
******************

BD OPERATIONAL
   626-PA-6007
       CH 3

TIME = 15:30:00.79
***SYSTEM CHECK***
```

Any other printout is a sign of a malfunction. Exception: The 626-PA-6007 cannot be calibrated if the minimum time is set to 320 msec. An attempt to do so will cause an ERROR message.

3.0 626-PA-6007 SERIES OPTIONS

All 626 Series options are intended for installation at time of original manufacture. None are field retrofittable.

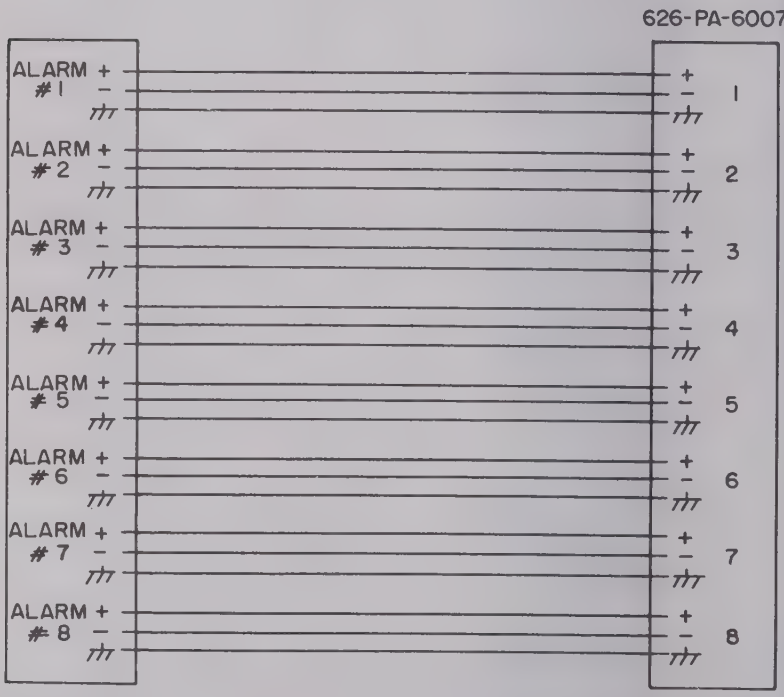
3.1 OPTION 101 FOR 626-PA-6007 SERIES

This option allows the user to specify a special set-up program for the 626-PA-6007. This will be accessed by pushing the PRESET button while in PROGRAM mode.

4.0 APPLICATIONS FOR 626-PA-6007 SERIES

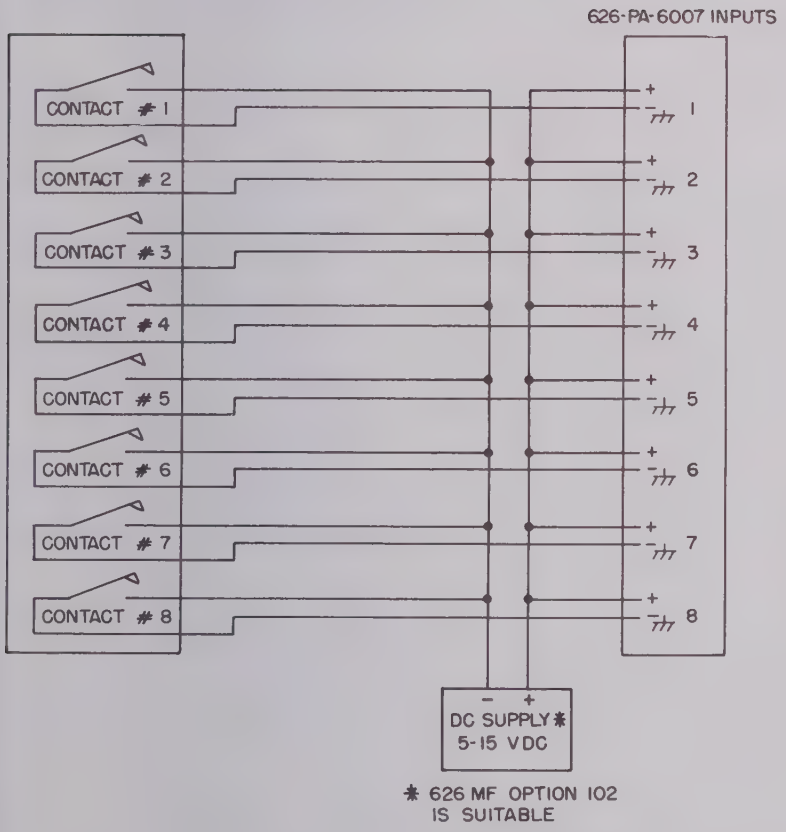
Connection To Backplane Alarm Signals

(No Separate Contact Supply Required)



Connection to Relay Contacts

(Separate Contact Supply Required)



TEMPERATURE AND HUMIDITY PLUG-IN MODULE

626-PA-6008

1.0 INTRODUCTION

The 626-PA-6008 will monitor one temperature channel, 0 – 100°C; and one humidity channel, 0 – 100% R.H. It occupies one slot in the 626 mainframe, and makes its measurements with two separate detachable probes.

2.0 OPERATION

2.1 CONNECTION

The 626-PA-6008 operating program assigns individual upper and lower limits to the monitored temperature and humidity. In addition, a sensitivity is assigned similar to voltage sensitivity. The last program used is always retained until the next use, even with the FUNCTION switch OFF.

The two probes are plugged into the two clearly marked connectors on the back of the 626-PA-6008. If desired, each probe may be extended up to 100 feet total lead length with the available extensions.

Place the two probes in the desired locations. Secure the leads to the floor, cabinets, etc. to avoid accidents.

The 626-PA-6008, when installed in a 626 mainframe with the FUNCTION switch in the OPERATE mode, will record variations which may occur in the monitored temperature and humidity.

2.2 PRINTOUTS

Both temperature and humidity are measured and averaged over 20 second intervals. These measurements are used to generate INC, DEC, LO, HI, and NOR printouts quite similar to those produced by the voltage monitoring plug-ins. Note that no SAGS or SURGES will be printed. Some sample printouts:

```
F      2T NOR 14:08:37.20
          000.1 DEG C MIN

E      2H HI 14:07:54 82

D      2T DEC 14:07:36.48
          000.1 DEG C

C      2T LO 14:07:36 48

B      2H DEC 14:07:34.58
          035.2 % RH

A      2T DEC 14:07:16.24
          021.2 DEG C
```

Read Up

(626-PA-6008 in Slot 2)

F { Temperature goes *above* Lo Limit at indicated time.
F { Minimum temperature during under-temp was 000.1°C.

E Humidity goes above HI Limit at indicated time.

D Temperature DECreases to 000.1°C at indicated time.

C Temperature goes *below* LO limit at indicated time.

B Humidity DECreases to 035.2% R.H. at indicated time.

A Temperature DECreases to 021.2°C at indicated time.

2.3 SUMMARIES

2.3.1 Program Summary

```
HIGH LIMIT 075
LOW LIMIT 025
SENS 005
   HUMIDITY

HIGH LIMIT 030
LOW LIMIT 020
SENS 002
 TEMPERATURE
 626-PA-6008
      CH 2

TIME = 14:06:32.03
 PROGRAM SUMMARY
```

Read Up

The 626-PA-6008 PROGRAM SUMMARY details separately the SENS, LOW LIMIT, and HIGH LIMIT for the Temperature and Humidity sections of the 626-PA-6008.

2.3.2 Data Summary

The DATA SUMMARY for the 626-PA-6008 separates the data into separate sections for Temperature and Humidity, and then presents the following for each:

Total time above HI LIMIT.

Highest measurement.

Number of times above HI LIMIT.

Total time below LO LIMIT.

Lowest measurement.

Number of times below LO LIMIT.

Present Condition.

Read Up

```
TIME= 0001.0 MIN
MAX   100.0 % RH
HIGH   001 HT
TIME= 0002.5 MIN
MIN   016.8 % RH
LOW    002 HT
PRES=017.6 % RH
    HUMIDITY

TIME= 0001.7 MIN
MAX   031.7 DEG C
HIGH   001 HT
TIME= 0000.0 MIN
MIN   023.9 DEG C
LOW    000 HT
PRES=031.5 DEG C
  TEMPERATURE

  626-PA-6008
      CH 3

TIME = 14:32:51.78
      DAY # 00
   DATA SUMMARY
```

2.4 PROGRAMMING

The 626-PA-6008 is programmed very much like the voltage monitoring plug-ins. First, depress the pushbutton (1-5) corresponding to the position of the 626-PA-6008 in the mainframe, and then turn the FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed, as shown on next page.

```
HIGH LIMIT 075
LOW LIMIT 025
SENS 005
   HUMIDITY

HIGH LIMIT 030
LOW LIMIT 020
SENS 002
 TEMPERATURE


 626-PA-6008
     CH 3
PROGRAM SUMMARY

 PROGRAM MODE
```

Read Up

Let us re-program Temperature SENS = 03, and Humidity HIGH LIMIT = 65:

LIGHTS	KEY SEQUENCE	PRINTOUT
1 RED	INPUT	1 FOR HUMIDITY 0 FOR TEMPERATURE ENTER:
1 YELLOW	0	None
1 GREEN	ENTER	TEMPERATURE
1 RED	SENS	None
2 YELLOW	0 3	None
1 GREEN	ENTER	SENS 03
1 RED	INPUT	1 FOR HUMIDITY 0 FOR TEMPERATURE ENTER:
1 YELLOW	1	None
1 GREEN	ENTER	HUMIDITY

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LIGHTS	KEY SEQUENCE	PRINTOUT
1 RED	HI LIMIT	None
3 YELLOW	0 6 5	None
1 GREEN	ENTER	HIGH LIMIT 065

In summary, for each programming step, the operator must:

- Select whether the Temperature or the Humidity program is to be altered.
- Select the parameter to be programmed.
- Enter the new program value.

This is followed by a printed confirmation of the new program value, and a prompt to start the sequence over again.

2.4.1 Acceptable Program Values

1. *Temperature Section*

   Sensitivity: Minimum Value = 1°C
   Maximum Value = 25°C

   High Limit: Range = 1° to 100°C

   Lo Limit: Range = 0° to 99°C

   High Limit must exceed Lo Limit by at least 1°C.

2. *Humidity Section*

   Sensitivity: Minimum Value = 1% R.H.*
   Maximum Value = 25% R.H.

   High Limit: Range = 1%* to 100% R.H.

   Lo Limit: Range = 0% to 99%* R.H.

   High Limit must exceed Lo Limit by at least 1%* R.H.

* Recommendation of Good Practice: Humidity sensitivity should not be set to less than 3% R.H., in view of 3% accuracy specification. Therefore, the following are recommended:

- 3% ≤ Sensitivity ≤ 25%
- Minimum High Limit = 3%
- Maximum Lo Limit = 97%
- High Limit should exceed Lo Limit by at least 3% R.H.

Notes

1. The parameters may be programmed in any order.
2. If any attempt is made to program High Limit ≤ Low Limit (or Low Limit ≥ High Limit), the entered value is accepted and the other limit is forced to a value such that High Limit > Low Limit, with the minimum acceptable differential.
3. If any parameter is entered which is unacceptable, the message

ENTRY TOO HIGH

OR

ENTRY TOO LOW

is printed, as appropriate. The operator is then cued, with the yellow lights and printed messages, to try again.

4. If the wrong parameter is selected, simply re-program that value before proceeding to the desired parameter.
5. If incorrect values are selected, before pushing the ENTER key, depress the CLEAR ENTRY key and select the proper values.

2.5 SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch PROGRAM. A PROGRAM SUMMARY will be printed.
2. Depress PRESET pushbutton. The PRESET program will be load into the mainframe CPU. PRESET values will be printed in a n PROGRAM SUMMARY.

2.6 SYSTEM CHECK

The 626-PA-6008 System Check provides normal values as follows:

Humidity:	10.2 ±0.1
Temperature:	91.9 ±0.2

3.0 626-PA-6008 OPTIONS

All 626 series options are intended for installation at time of original manufacture. None are field retrofittable.

3.1 OPTION 101 FOR 626-PA-6008 SERIES

This option allows the user to specify a special set of values for the PRESET values for a 626-PA-6008. Any set of values drawn from Section 2.4.1 of this section of the User's Guide is acceptable.

4.0 APPLICATIONS FOR 626-PA-6008 SERIES

The Humidity Probe can be taped in place, held with strips of Velcro, or hung using tie wraps with eyelets. The Temperature Probe can be hung with its metal clip, taped in place, or fastened using the included tie wraps.

Computer Specifications

Computer manufacturers are more commonly paying attention to temperature and humidity within the computer room. One major manufacturer makes the following recommendations:

Temperature:	Minimum: 18°C (65°F)
	Maximum: 24°C (75°F)
Humidity:	Minimum: 40% R.H.
	Maximum: 60% R.H.

Specifications from individual companies should be available on request, from their Service departments. The 626-PA-6008 may then be programmed to match.

5.0 OPTIONAL ACCESSORIES

P/N 111058 is a pair of 90 foot extension cables for the Temperature and Humidity probes, to extend the total lead length to 100 feet. Use only one extension per probe.

THREE-PHASE, 400 HZ PLUG-IN MODULE

626-PA-6009

) INTRODUCTION

The 626-PA-6009 monitors 3 phase AC voltage, Wye or Delta, 50–600 AC, 350–450 HZ. It is available with Barrier Strip Input only.

) OPERATION

The 626-PA-6009 uses an operating program which assigns the follow- parameters defined in Section 1.2 of the Mainframe portion of this User's ide. Permissible values are as shown:

626-PA-6009 PARAMETERS	FORMAT (# OF ENTRIES)	PERMISSIBLE VALUES
HI LIMIT	3 XXX	051-600
LO LIMIT	3 XXX	050-599
V SENS	2 XX	02-60
FREQ SENS	1 X	1-9
IMP SENS	4 XXXX	0050-4000

PROGRAMMING THE 626-PA-6009

Programming the 626-PA-6009 should be an infrequent task, since the 5 retains all set-ups even when turned off. When programming is required, ceed as follows:

1. Select the plug-in to be programmed by depressing the pushbutton (1-5).
2. Turn the FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed, showing how the plug-in is currently programmed.
3. The RED LED above the 12 RED pushbuttons is now lit. As an example, the programming of this set-up will be illustrated:

IMPULSE SENS	0150 V
FREQ SENS	5 HZ
VOLTAGE SENS	10 V
V LOW LIMIT	432 V
V HIGH LIMIT	528 V

	LIGHTS	KEY SEQUENCE	PRINTOUT
HI LIMIT	1 RED	[HI LIMIT]	None
	3 YELLOW	[5] [2] [8]	None
	1 GREEN	[ENTER]	V HIGH LIMIT 528 V
LO LIMIT	1 RED	[LO LIMIT]	None
	3 YELLOW	[4] [3] [2]	None
	1 GREEN	[ENTER]	V LOW LIMIT 432 V
V SENS	1 RED	[SENS]	None
	2 YELLOW	[1] [0]	None
	1 GREEN	[ENTER]	VOLTAGE SENS 010 V
F SENS	1 RED	[F SENS]	None
	1 YELLOW	[5]	None
	1 GREEN	[ENTER]	FREQ SENS 5.0HZ

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LIGHTS	KEY SEQUENCE	PRINTOUT
1 RED	IMP SENS	None
4 YELLOW	0 1 5 0	None
1 GREEN	ENTER	IMPULSE SENS 0150U

Notes

1. The parameters may be programmed in any order.

2. If any attempt is made to program High Limit $\leq$ Low Limit (or Low Limit $\geq$ High Limit), the entered value is accepted and the other limit is forced to a value such that High Limit $>$ Low Limit, with the minimum acceptable differential.

3. If any parameter is entered which is unacceptable, the message

ENTRY TOO HIGH

OR

ENTRY TOO LOW

is printed, as appropriate. The operator is then cued, with the yellow lights and printed messages, to try again.

4. If the wrong parameter is selected, simply re-program that value before proceeding to the desired parameter.

5. If incorrect values are selected, before pushing the ENTER key, depress the CLEAR ENTRY key and select the proper values.

2.2 SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed.
2. Depress PRESET pushbutton. The PRESET program will be loaded into the mainframe CPU. PRESET values will be printed in a new PROGRAM SUMMARY.

2.3 SYSTEM CHECK

Normal values are as follows:

AC VOLTAGE	200.0 VAC
IMPULSE PEAK	2000 Volts
IMPULSE DURATION	10 μ sec
FREQUENCY	400 HZ

Tolerances are:

AC VOLTAGE	196.0 – 204.0 Volts
IMPULSE PEAK	1800 – 2200 Volts
IMPULSE DURATION	8 – 12μ sec
FREQUENCY	399 – 401 HZ

3.0 626-PA-6009 OPTIONS

All 626 series options are intended for installation at time of original manufacture. None are field retrofittable.

3.1 OPTION 101 FOR 626-PA-6009 SERIES

This option allows the user to specify a special set of values for the PRESET values for a 626-PA-6009. Any set of values drawn from the "formats" and "permissible values" listings in Section 2.0 may be specified.

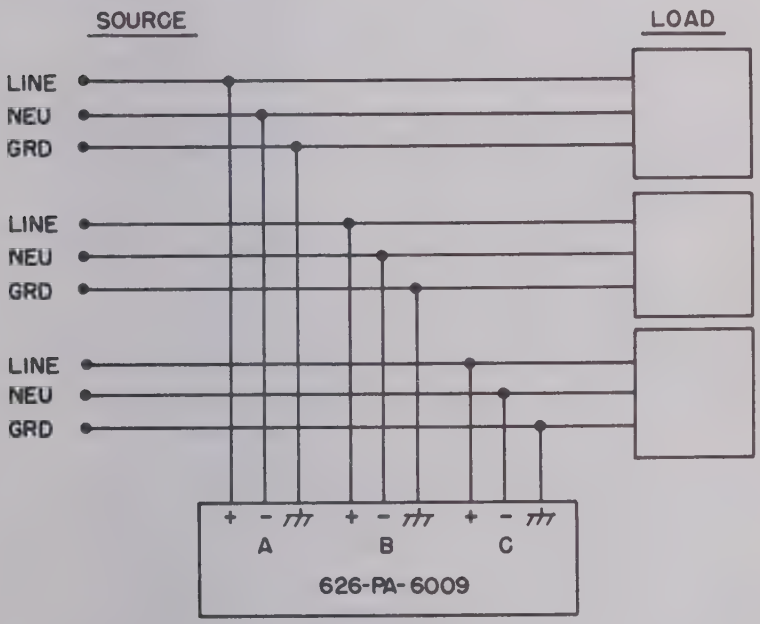
4.0 APPLICATIONS FOR 626-PA-6009

The 3 phase AC monitor for 350–450 Hz may be used for 3 phase wye, 3 phase delta, or for up to three separate AC signals. Note that the plug-in monitors *only* the voltage difference between its + and – inputs, with the ⏚ input acting only as a common grounding point. The ⏚ input is tied to the safety grounding conductor on the 626 power plug, so be careful not to inadvertantly contaminate a "clean" computer ground with a "dirty" building ground.

WARNING

Connection should only be performed by qualified personnel. Conductors connecting to measurement points should be approved for the specific use. When connected to branch circuits of 20 amperes or less, minimum flexible cord size is No. 18. (1 mm^2). For branch circuits with higher ampacity, refer to National Electric Code (ANSI CI–1975 Para. 240–4 and Para. 250–95). Special consideration of ground may be required. Refer to Article 250 of above reference if in doubt. Outside U.S.A. consult applicable safety standards.

3 Separate AC Lines



Notes

1. All Channels are monitored independently.
2. All line frequencies must be the same.
3. All 3 channels will have same program set-up.

2.2 PRINTOUTS

Printouts are unaffected by the choice of PRINTOUT MODE, unless SUMMARY ONLY is selected.

For transitions from ACCUMULATING state to NON-ACCUMULATING state:

Example: 1 626-PA-6011 in Slot 5. Input 8 is programmed to accumulate Total Time spent in NORMAL condition. Input 8 goes from NORMAL to ALARM state, having spent exactly one minute in NORMAL condition.

Printout:

```
N ET = 0001.0 MIN
5 #8 A 02:46:13.57
```

Elapsed Time in NORMAL was 1.0 Minute Input #8 now in ALARM state, transition at time indicated.

For transitions to the ACCUMULATING state:

1. From the NORMAL to the ALARM condition:

   Example: 1 626-PA-6011 in Slot 2. Input 3 goes from NORMAL to ALARM:

   ```
   2 #3 A 12:34:56.78
   ```

2. From the ALARM to the NORMAL condition:

   Example: A 626-PA-6011 in Slot 4. Input 8 goes from ALARM to NORMAL:

   ```
   4 #8 N 01:23:45.67
   ```

2.3 SUMMARIES

2.3.1 Program Summaries

```
T 0 1 1 0 0 0 1 1
P 1 0 1 0 1 1 0 0
# 1 2 3 4 5 6 7 8

MIN TIME=010 MSEC

    626-PA-6011
        CH 1

TIME = 15:29:47.35
 PROGRAM SUMMARY
```

Read Up

Explanation:

Top Line (T): A O indicates that total time in the NORMAL condition will be accumulated for the individual input. A 1 indicates that total ALARM time will be accumulated.

Second Line (P): A O indicates that OFF or LOW or OPEN is the NORMAL condition. A 1 indicates that ON or HIGH or CLOSED is NORMAL.

Third Line (#): Indicates the individual inputs (1–8).

Fourth Line: Minimum or debounce time may be programmed to 5, 10, 20, or max. Max. may be jumper-selected to be 40, 80, 160, or 320 msec.

Bottom 4 Lines: There is a 626-PA-6011 installed Channel 1. A PROGRAM SUMMARY was requested at 15:29:47.35.

	LIGHTS	KEY SEQUENCE	PRINTOUT
Minimum Time	1 RED	F SENS	4 FOR 320 MSEC 3 FOR 20 MSEC 2 FOR 10 MSEC 1 FOR 5 MSEC PRESS
	1 YELLOW	3	None
	1 GREEN	ENTER	Complete PROGRAM SUMMARY, Including Prompts
Polarity	1 RED	SENS	0 FOR N/O OR OFF 1 FOR N/C OR ON ENTER 8 DIGITS
	4 YELLOW	0 0 0 0	None
	1 GREEN	ENTER	None
	4 YELLOW	1 1 1 1	None
	1 GREEN	ENTER	Complete PROGRAM SUMMARY, Including Prompts
ETA Mode	1 RED	IMP SENS	ENTER 8 DIGITS 0 = T IN NORMAL 1 = T IN ALARM PRESS
	4 YELLOW	1 1 0 0	None
	1 GREEN	ENTER	None
	4 YELLOW	0 0 1 1	None
	1 GREEN	ENTER	Complete PROGRAM SUMMARY, Including Prompts

Notes

1. The programming may be done in any sequence.
2. If an incorrect digit is entered, the original prompt will be repeated.
3. If the wrong parameter is selected, simply re-program the desired set-up before proceeding to the desired parameter.
4. If incorrect values are selected, before pushing the ENTER key, depress the CLEAR ENTRY key and select the proper values.

2.5 SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed.
2. Depress PRESET pushbutton. The PRESET program will be loaded into the mainframe CPU. PRESET values will be printed in a new PROGRAM SUMMARY.

2.6 SYSTEM CHECK

When the PRINTOUT MODE switch is set to CALIBRATE, board status is checked and a SYSTEM CHECK printout is produced. If the 626-PA-6011 module is determined to be good, the following is printed:

```
**********************

BD  OPERATIONAL
    626-PA-6011
        CH  3

TIME  =  15:30:00.79
***SYSTEM CHECK***
```

Any other printout is a sign of a malfunction. Exception: The 626-PA-6011 cannot be calibrated if the minimum time is set to 320 msec. An attempt to do so will cause an ERROR message.

3.0 626-PA-6011 SERIES OPTIONS

All 626 Series options are intended for installation at time of original manufacture. None are field retrofittable.

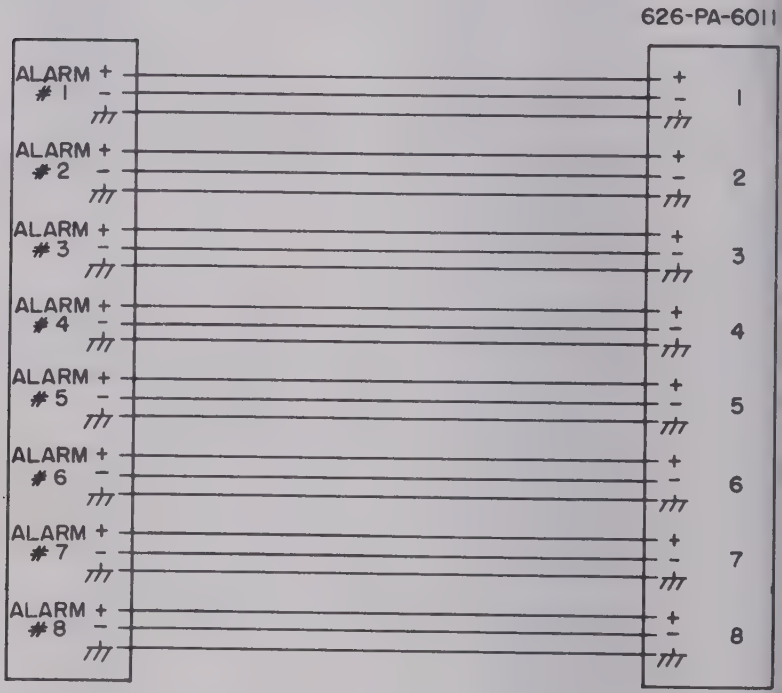
3.1 OPTION 101 FOR 626-PA-6011 SERIES

This option allow the user to specify a special set-up program for the 626-PA–6011. These will be accessed by pushing the PRESET button while in PROGRAM mode.

4.0 APPLICATIONS FOR 626-PA-6011 SERIES

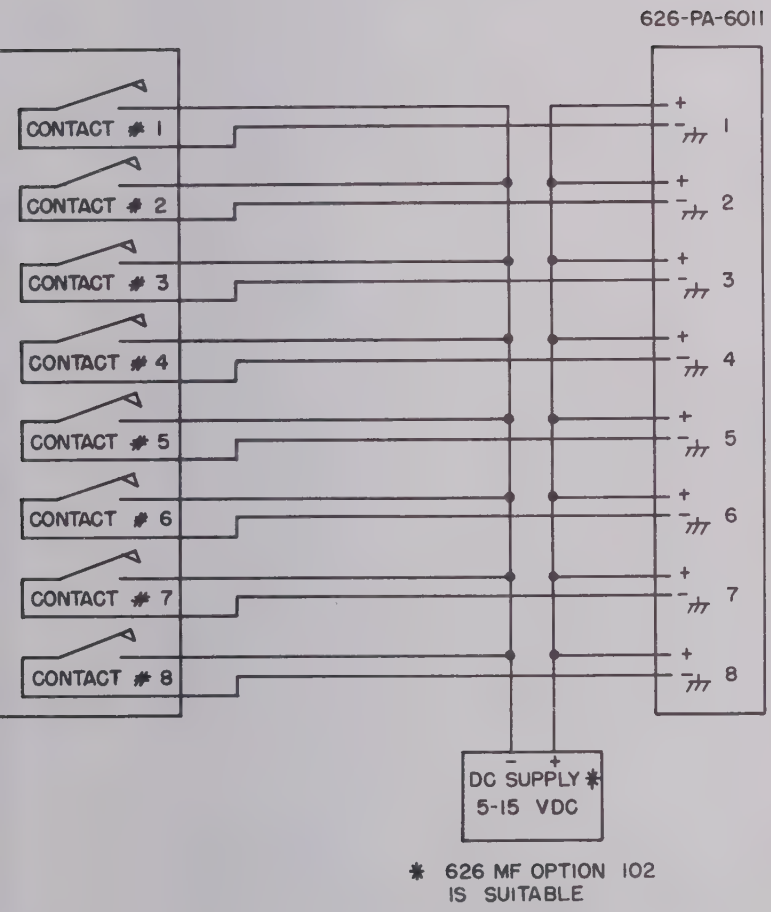
Connection To Backplane Alarm Signals

(No Separate Contact Supply Required)



Connection To Relay Contacts

(Separate Contact Supply Required)



COMMUNICATIONS PLUG-IN MODULE

626-PA-6012

1.0 INTRODUCTION

The 626-PA-6012 Communications Module is a double-width plug-in designed to accomplish two basic functions:

1. Store data transmitted via the 626 RS-232C port.
2. Transmit the stored data over a voice-grade phone line using a self-contained auto-answer/auto-dial 300 Baud modem.

2.0 OPERATION

1. The 626-PA-6012 is installed in 626 slots 1 and 2 and connected to the 626 RS-232C port with the cable supplied.
2. Connect the 626-PA-6012 directly to the phone line using the RJ11C Jack.
3. At the remote site, install an originate/answer 300 Baud modem and terminal as shown in Figure 1. An auto-answer modem is best at the remote site, since the 626-PA-6012 can automatically place calls if so programmed.

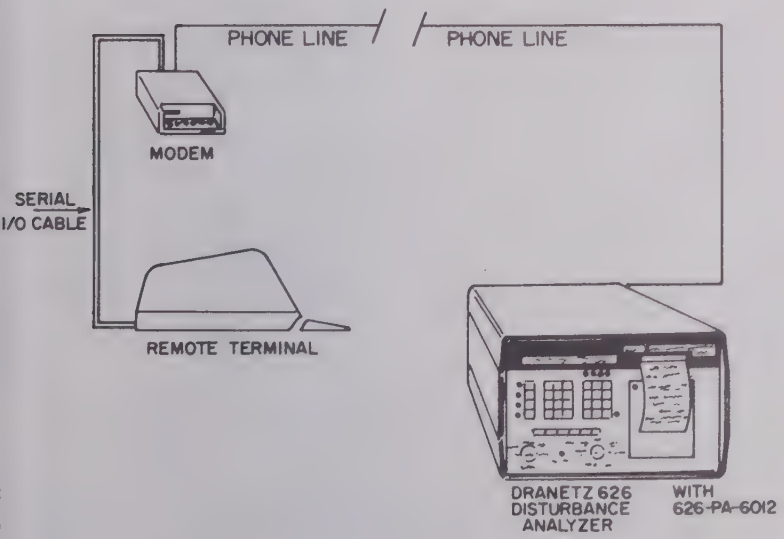


Figure 1. 626-PA-6012 Set-Up

2.1 CALLING THE 626-PA-6012 FROM THE REMOTE SITE

Note

This procedure is written for a Universal Data Systems UDS-103LP Modem at the remote site. The procedure for use with other modems should be similar. The 626-PA-6012 must be programmed to transmit "UPON REQUEST" for this procedure to work.

A. *Dialing*

1. Make sure the terminal is properly connected to the rear connector of the modem, and is set to 300 Baud.
2. Place the front panel switch of modem in the TALK position and the rear panel switch in ORIGINATE.
3. Make sure the phone is connected to the TELSET jack on rear panel, and phone line to TELCO.
4. Lift the phone off-hook and dial the phone number assigned to the 626-PA-6012.

B. *Logon*

1. After the ringing stops (usually first ring), listen for the Answer Back Tone, after the 2 second Billing Time wait period.
2. When the tone is heard, place the front panel switch in the DATA position, within 4 seconds.
3. A "?" should appear in 1 second. There are 15 seconds in which to now enter "IDXX", where XX is the station ID number assigned to the 626-PA-6012.
4. If the above steps are all properly executed, then the 626-PA-6012 will send "XX-READY". At this time the data link is established, and the terminal will operate as if it is directly connected to the RS-232C port of the 626. The 626 may be fully programmed via the 626-PA-6012 if it is equipped for remote operation, except for the 626-PA-6012. Its program cannot be altered while it is in use.

C. *Requesting a DATA DUMP (Remote Operation)*

1. With the 626 in OPERATE mode, send the special character ¦ to initiate a DATA DUMP.
2. If the 626-PA-6012 is programmed to transmit "UPON REQUEST", the stored data will be transmitted in 1K blocks.
3. If the 626-PA-6012 is in any other transmit mode, it will transmit "NOGO" followed by "BYE" and hang up, terminating the call.

2.1.1 Requesting a DATA DUMP (Local Operation)

1. Place the 626 into PROGRAM mode, and select the 626-PA-6012 for programming.
2. A PROGRAM SUMMARY will be printed, including prompts. Enter "FNC 4" to select data transmission.
3. Confirm your request as instructed, and data transmission will begin.

2.2 RECEIVING A CALL FROM THE 626-PA-6012

A. *Call Reception*

1. Repeat steps 2.1 A, 1–3, except place the rear panel switch in the ANSWER position.
2. When the phone rings, lift the phone off hook and place the front panel switch in the TALK position.
3. In 2 seconds, the 626-PA-6012 will begin transmitting data, preceded by "STATION#XX" identification message.

B. *Data Transmission*

1. After the first 1K block of data (or partial block) is received, the 626-PA-6012 will wait for 10 seconds for:

   a. Positive Ack. (ΛF) – To terminate Wait Time.

   b. Negative Ack. (ΛU) – To Retransmit last block of data.

   c. End of Transmit (ΛD) – To Terminate call.

Note

Λ means "CONTROL".

2. When last block is sent, a "END OF XMIT" message is sent followed by a 10 sec wait.
3. The 626-PA-6012 will then hang up, after sending a "BYE" message.

Note

The call from the 626-PA-6012 may have been placed manually by the operator, or automatically if the 626-PA-6012 was so programmed.

2.3 PROGRAMMING THE 626-PA-6012

The operator begins the programming of the 626-PA-6012 by selecting the slot number corresponding to the *lower* numbered of the

two slots occupied by the plug-in. Then turn the FUNCTION switch to the PROGRAM mode. A PROGRAM SUMMARY similar to this will be printed:

```
FNC4=TRANSMIT
FNC3=STATION ID
FNC2=XMIT MODE
FNC1=PHONE #

UPON REQUEST
XMIT MODE:
238
PHONE NUMBER:
STATION ID # 25

   626-PA-6012
       CH 1
 PROGRAM SUMMARY

   PROGRAM MODE
```

Read Up

Reading up, this PROGRAM SUMMARY indicates that the 626-PA-6012 is occupying slots 1 (and 2). Continuing, we see that this 626 is assigned Station #25, and that all data transmission originating at Station #25 will be to phone number 238. Data may be transmitted UPON REQUEST (local or remote). The top section is a prompt telling us how to proceed.

Let us change the program to:

STATION ID: #27

PHONE NUMBER: 91 (Wait For Dial Tone) 201-555-1234

TRANSMIT MODE: Every 8 Hours

PHONE NUMBER

LIGHTS	KEY SEQUENCE	PRINTOUT
1 RED	[FNC]	None
1 YELLOW	[1]	None
1 GREEN	[ENTER]	MAX # = 16 WAIT-FOR-DIAL-TONE IN PHONE #, INCLUDE ENTER # OF DIGITS
2 YELLOW	[1] [3]	None
1 GREEN	[ENTER]	(WAIT-FOR-DT = , :) ENTER DIGITS
1 YELLOW	[9] [1] [•:•] [2] [0] [1] [5] [5] [5] [1] [2] [3] [4]	

Note

Yellow light will re-appear before entry of each digit.

1 GREEN	[ENTER]	UPON REQUEST XMIT MODE: 91:2015551234 PHONE NUMBER: STATION ID # 25 626-PA-6012

FOLLOWED BY

FNC4=TRANSMIT
FNC3=STATION ID
FNC2=XMIT MODE
FNC1=PHONE #

This is the beginning prompt, indicating that the user may now stop, or continue with additional programming.

TRANSIT (XMIT) MODE

LIGHTS	KEY SEQUENCE	PRINTOUT
1 RED	FNC	None
1 YELLOW	2	None
1 GREEN	ENTER	W/ STK FLL OPT 5=EVERY X HOURS 4=EVERY X HOURS 3=UPON REQUEST 2=EVERY EVENT 1=STACK FULL 0=NEVER PRESS:
1 YELLOW	4	None
1 GREEN	ENTER	ENTER HOURS
2 YELLOW	0 8	None
1 GREEN	ENTER	EVERY 08 HOUR(S) XMIT MODE: 91:2015551234 PHONE NUMBER: STATION ID # 25 626-PA-6012 FOLLOWED BY FNC4=TRANSMIT FNC3=STATION ID FNC2=XMIT MODE FNC1=PHONE #

ID NUMBER

LIGHTS	KEY SEQUENCE	PRINTOUT
1 RED	FNC	None
1 YELLOW	3	None
1 GREEN	ENTER	ENTER ID #
2 YELLOW	2 7	None
1 GREEN	ENTER	EVERY 08 HOUR(S) XMIT MODE: 91:2015551234 PHONE NUMBER: STATION ID # 27 626-PA-6012 FOLLOWED BY FNC4=TRANSMIT FNC3=STATION ID FNC2=XMIT MODE FNC1=PHONE #

Programming is now completed. Return FUNCTION switch to OPERATE mode.

Notes

1. Programming may be done in any order.
2. If the wrong parameter is selected, simply re-program that value before proceeding to the desired parameter.
3. If incorrect values are selected, before pushing the ENTER key, depress the CLEAR ENTRY key and select the proper values.

2.4 SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed.
2. Depress PRESET pushbutton. The PRESET program will be loaded into the mainframe CPU. PRESET values will be printed in a new PROGRAM SUMMARY.

2.5 SYSTEM CHECK

A normal SYSTEM CHECK printout is shown:

```
********************

RS232C PORT = GOOD
MODEM PORT = GOOD
MEM- 0448 GOOD

    626-PA-6012
        CH 1

TIME = 15:32:12.83
***SYSTEM CHECK***
```

RS-232C Port = BAD may simply mean a loose or damaged interconnect cable. Other problems should be referred to the factory.

2.6 DATA SUMMARY

A normal DATA SUMMARY is shown. The information includes the number of phone calls received, plus a status report similar to SYSTEM CHECK.

```
RS232C PORT = GOOD
MODEM PORT = GOOD
MEM- 0448 GOOD
# OF CALLS = 00
        CH 1

TIME = 15:32:52.94
      DAY # 00
   DATA SUMMARY
```

3.0 OPTIONS FOR 626-PA-6012

All 626 series options are intended for installation at time of original manufacture. None are field retrofittable.

3.1 OPTION 101 FOR 626-PA-6012 SERIES

This option allows the user to specify a special set of values for the 626-PA-6012 PRESET program. The program will include:

1. Transmit Mode
2. Phone number to be called, up to 16 digits including wait-for-dial-tone (•⁚).
3. Station ID # (00–99).

3.2 OPTION 102 FOR 626-PA-6012 SERIES

This option expands the 626-PA-6012 event memory from approximately 200 events to approximately 450 events.

EIGHT POINT TEMPERATURE PLUG-IN MODULE

626-PA-6014

1.0 INTRODUCTION

The 626-PA-6014 monitors eight temperature points, with a range of -50° to +150°C. Eight temperature sensors with 10 foot leads are included.

2.0 OPERATION

The 626-PA-6014 uses an operating program which assigns the following parameters, defined in Section 1.2 of the Mainframe portion of this User's Guide. Permissible values are as shown:

626-PA-6014 PARAMETERS	FORMAT (# OF ENTRIES)	PERMISSIBLE VALUES
HIGH LIMIT	3 XXX	002*–150°C
LO LIMIT	3 XXX	000*–148°C
SENSITIVITY	2 XX	01–25°C

* Negative values through PRESET ONLY. See Section 3.1.

2.1 PROGRAMMING THE 626-PA-6014

Programming the 626-PA-6014 is quite straightforward, with printed prompts and LED's guiding the operator. The sequence for programming is logically laid out as follows:

1. Select the input (A–H) to be programmed.
2. Select the parameter (HI, LO or SENS) to be changed.
3. Enter the values.

We will go through one change, starting from the standard preset values as shown:

```
HIGH LIMIT +030
LOW LIMIT +020
SENS 002
   INPUT H

HIGH LIMIT +030
LOW LIMIT +020
SENS 002
   INPUT B
HIGH LIMIT +030
LOW LIMIT +020
SENS 002
   INPUT A

 626-PA-6014
     CH 5
PROGRAM SUMMARY

  PROGRAM MODE
```

Read Up

Note

Inputs C through G are the same and not shown.

Let us simply change the low limit of input A to +25°C.

LIGHTS	KEY SEQUENCE	PRINTOUT
1 RED	INPUT	INPUTS A-H ENTER 1-8 FOR
1 YELLOW	1	None
1 GREEN	ENTER	INPUT A
1 RED	LO LIMIT	None
3 YELLOW	0 2 5	None
1 GREEN	ENTER	LOW LIMIT 025
1 RED	(Proceed with further changes)	

(Refer to notes on next page.)

Notes

1. The parameters may be programmed in any order.
2. If any attempt is made to program High Limit $\leqslant$ Low Limit (or Low Limit $\geqslant$ High Limit), the entered value is accepted and the other limit is forced to a value such that High Limit $>$ Low Limit, with the minimum acceptable differential.
3. If any parameter is entered which is unacceptable, the operator is cued, with the yellow lights and printed messages, to try again.
4. If the wrong parameter is selected, simply re-program that value before proceeding to the desired parameter.
5. If incorrect values are selected, before pushing the ENTER key, depress the CLEAR ENTRY key and select the proper values.

2.2 SELECTING PRESET PROGRAM

1. Select module to be programmed and turn FUNCTION switch to PROGRAM. A PROGRAM SUMMARY will be printed.
2. Depress PRESET pushbutton. The PRESET program will be loaded into the mainframe CPU. PRESET values will be printed in a new PROGRAM SUMMARY.

2.3 SYSTEM CHECK

The system check for a 626-PA-6014 inspects 3 internal voltage references. Normal values and tolerances are as follows:

V3 = 000.0	+0.1
V2 = 010.2	±0.1
V1 = 091.9	±0.2

3.0 626-PA-6014 OPTIONS

All 626 series options are intended for installation at time of original purchase. None are field retrofittable.

3.1 OPTION 101 FOR 626-PA-6014 SERIES

This option allows the user to specify a special set of values for the PRESET program values. Any set of values from the table in Section 2.0 may be specified, plus HIGH and LOW LIMITS to -48°C and -50°C, respectively.

4.0 APPLICATIONS FOR 626-PA-6014 SERIES

Probes : The individual sensors may be clipped or taped in place. Tie wraps with eyelets are included for this purpose. The cables may be extended up to 100′ total by use of the optional extension P/N 111056-G2.

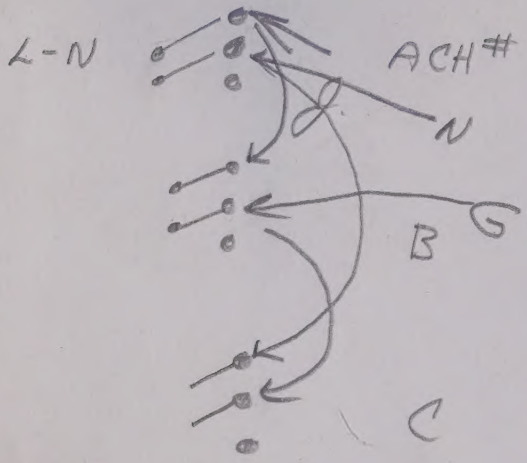
Uses : 1. Within the computer room, distribute probes so as to pick up temperature shifts which may be caused by blocked air handling ducts.

2. Within a system cabinet, locate the probes so as to record "hot spots" which may arise, due to poor air circulation, failed or over stressed assemblies, etc.

5.0 OPTIONAL ACCESSORIES

P/N 111056-G2, a 90′ extension cable, may be ordered to extend total lead length to 100′. Order up to one extension per channel. Do not use more than one extension cable per channel.

230/3000
230
700



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